Comprehensive Analysis of Public Parking – FINAL DRAFT

Stillwater, Oklahoma

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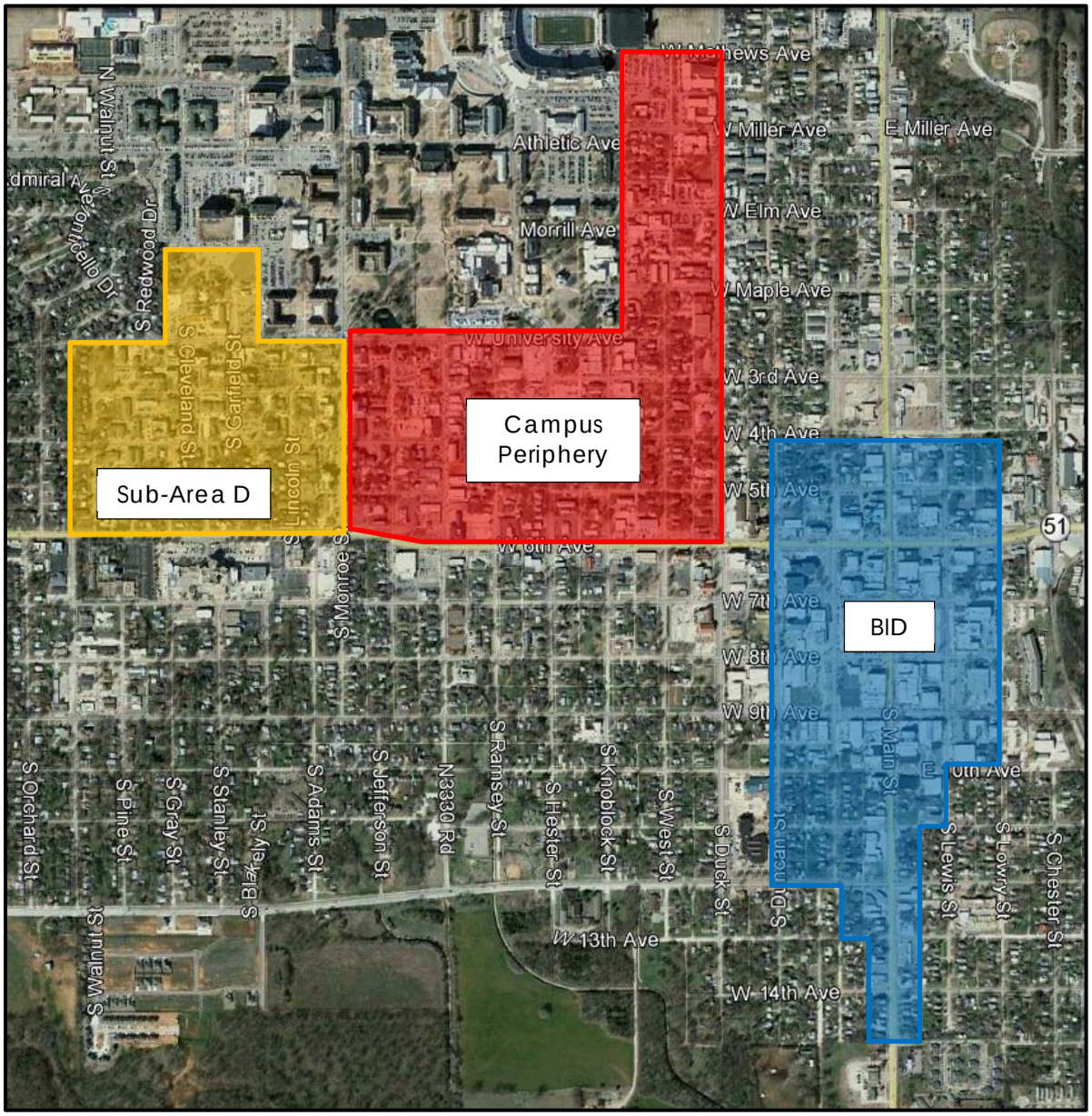
EXECUTIVE SUMMARY

Introduction

The primary purpose of this project is to determine short-term and long-term recommendations to improve a number of parking challenges in Stillwater, Oklahoma. The analysis focuses on two specific study areas, the Business Improvement District (BID) and the Campus Periphery area (including Sub-Area D); however; the parking operational and management recommendations developed during the study can be applied city wide. The following graphic illustrates the boundaries of each primary study area.



Current Parking Supply and Demand

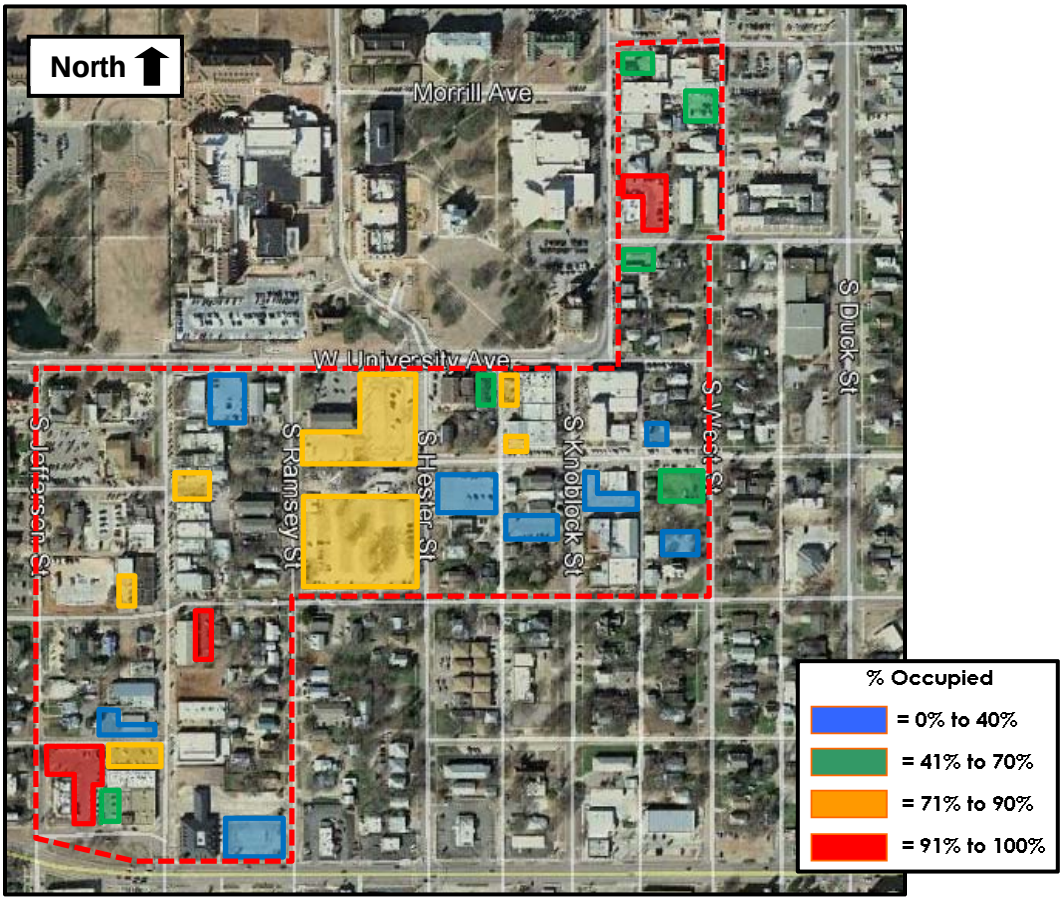
Parking inventory and occupancy counts were conducted in each primary study area in September 2012 over three weekdays (between 8:00 a.m. and 4:00 p.m.). While the inventory survey included each entire study area, occupancy surveys were only conducted in core demand areas (the graphics on pages VI and VII illustrate the size and location of each sample area). Off-street parking areas designated solely for residential parking were not included in the surveys (e.g., apartment parking lots and residential driveways). The results of the counts are as follows:

- **BID Study Area (Downtown Stillwater)**
  - Current Parking Supply in Overall Study Area:
    - 1,245 on-street parking spaces.
    - 1,238 off-street parking spaces (170 public).
    - 2,483 total parking spaces.
  - Sample Area Parking Supply, Demand, and Effective Adequacy:
    - Sample Area Parking Supply: 1,632 spaces.
    - Peak Observed Parking Demand: 867 vehicles.
    - *Current Underutilized Parking Supply: 765 spaces in Sample Area.*
- **Campus Periphery Study Area (Campus Corner)**
  - Current Parking Supply in Overall Study Area:
    - 646 on-street parking spaces.
    - 1,727 off-street parking spaces (9 public).
    - 2,373 total parking spaces (not including residential).
  - Sample Area Parking Supply, Demand, and Effective Adequacy:
    - Sample Area Parking Supply: 1,349 spaces.
    - Peak Observed Parking Demand: 891 vehicles.
    - *Current Underutilized Parking Supply: 458 spaces in Sample Area.*
- **Sub-Area D Study Area (Greek Neighborhood and Mixed-Residential)**
  - Current Parking Supply in Overall Study Area:
    - 223 on-street parking spaces.
    - 310 off-street parking spaces (all OSU lots).
    - 533 total parking spaces (not including residential).
  - Snapshot Parking Supply, Demand, and Effective Adequacy:
    - Sample Area Parking Supply: 533 spaces.
    - Peak Observed Parking Demand: 475 vehicles.
    - *Current Underutilized Parking Supply: 58 spaces.*

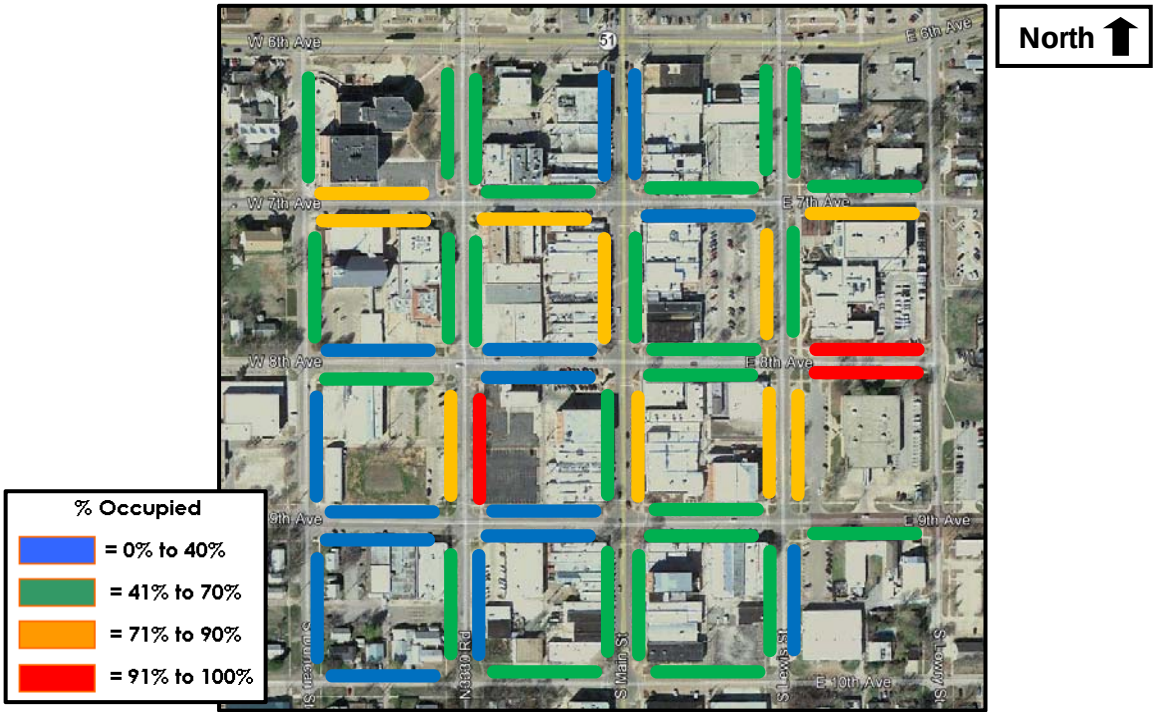
The following graphics illustrate observed off-street and on-street parking utilization in each primary sample area during the average peak period of observed parking. While some parking spaces were available in Sub-Area D, the parking supply was effectively full during the peak period of observed occupancy.

BID Area: Off-Street Survey Sample – Occupancy at Avg. Peak (2:00 p.m.)

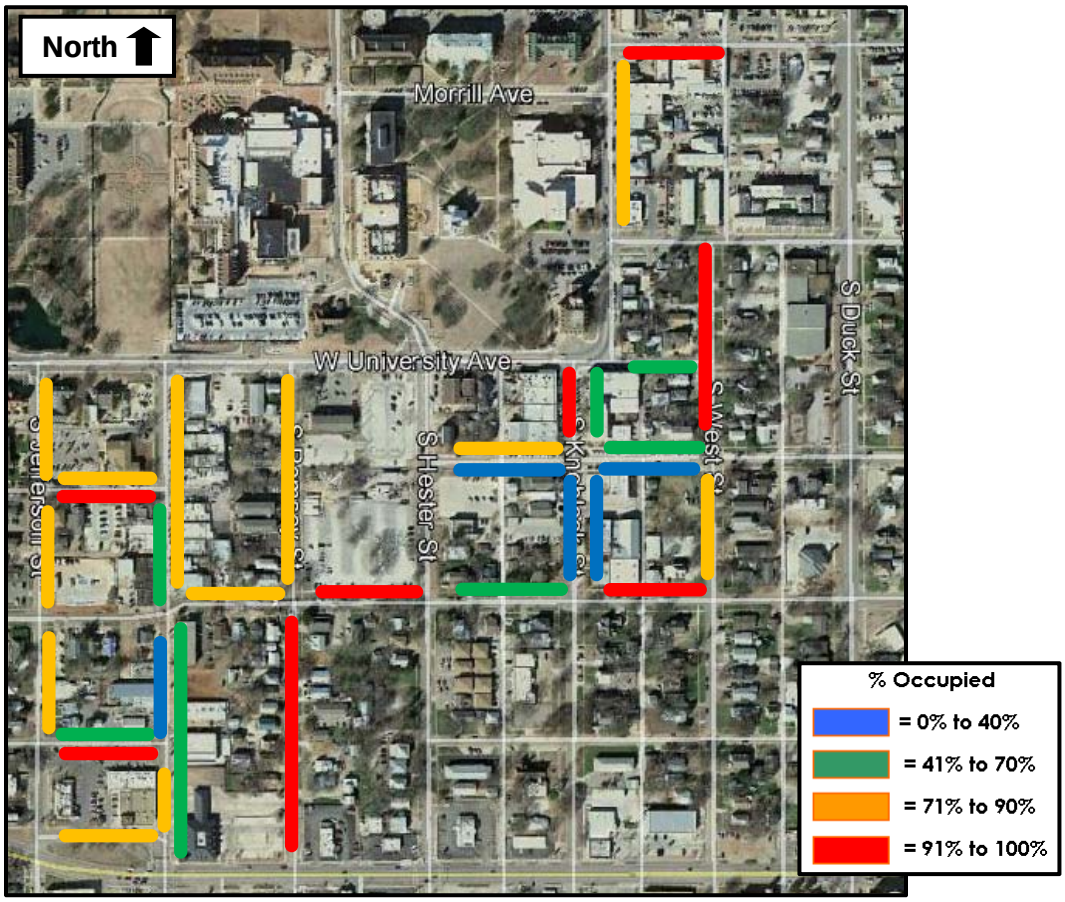
Campus Periphery Area: Off-Street Survey Sample – Occ. at Avg. Peak (1:00 p.m.)



BID Area: On-Street Survey Sample – Occupancy at Avg. Peak (2:00 p.m.)



Campus Periphery Area: On-Street Survey Sample – Occ. at Avg. Peak (1:00 p.m.)



Future Parking Conditions

Currently, the City of Stillwater has several anticipated future development projects in the construction or planning stages that will impact parking in the study areas. These projects include residential, office, and theater projects. The anticipated developments impacting the study areas are (details can be found in Section 3.0 of the full report):

1. Fourth and Hester (Residential)
2. Duncan and Elm (Residential)
3. Oklahoma State University Performing Arts Center
4. Surface Parking Lot (northeast corner of Monroe Street and Third Avenue)
5. Expansions of Greek Housing
6. Wesley Foundation
7. OSU Wentz Lane Parking Structure

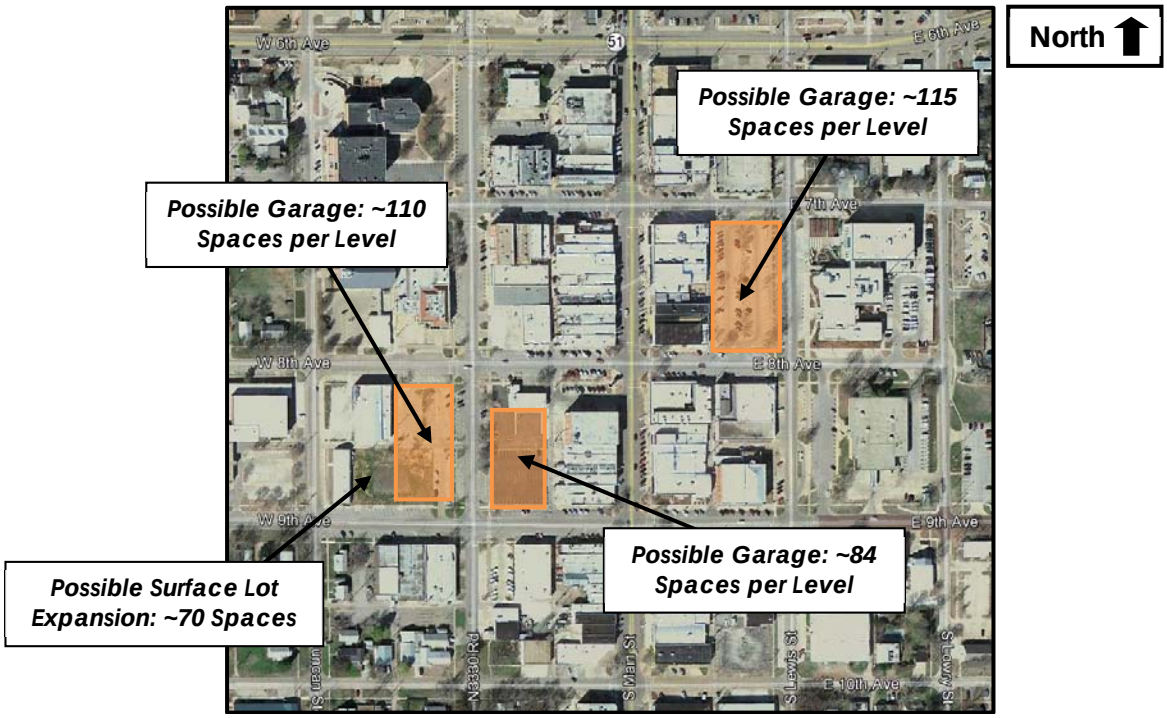
All of the currently anticipated future development projects provided by the City of Stillwater are occurring in and around the Campus Periphery Study Area. There are no future development projects currently anticipated in the BID Study Area.

In addition to future development projects, there are expectations that study area populations will increase over time.

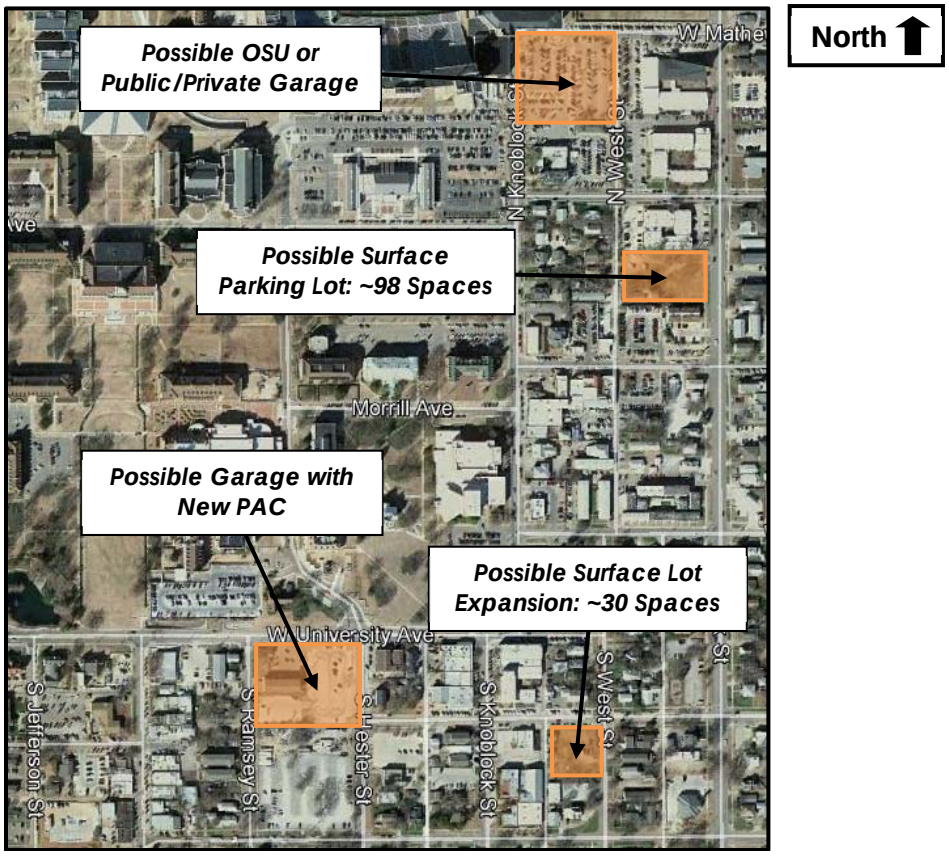
- OSU student populations are projected to increase an average of 2.75% per year over the next five years.
- It is anticipated that the Greek community (general membership, not new residents) may grow up to 10% per year for the foreseeable future.
- The population of the BID Study Area is projected to increase by as much as 4.87% by 2020 or 80 new people. The population of the Campus Periphery Study Area is projected to increase by as much as 11.02 % by 2020 or 360 new people.
- Employment in the BID Study Area could increase by 97 to 290 positions by 2020. Employment in the Campus Periphery Study Area could increase by 24 to 100 positions by 2020.
- The overall population of Stillwater is currently anticipated to grow at an average annual rate of approximately 1.5%.

The current estimated parking surplus for the full BID Study Area of 847 spaces is projected to fall to 477 spaces by 2020. The parking surplus of the full Campus Periphery Study Area is projected to fall to 236 spaces from the current surplus of 514 spaces. Increasing parking demands will necessitate improving the utilization of available parking spaces (both on-street and off-street, public and private), constructing additional parking spaces when warranted, and/or improving the utilization of alternative forms of transportation. The following graphics illustrate possible locations for future parking supply additions.

Possible Locations for Future Parking Facilities – BID Study Area



Possible Locations for Future Parking Facilities – Campus Periphery Study Area



Parking Management Action Plan

While current parking supplies are generally sufficient to meet current and near-term demands (especially if the existing supplies are fully utilized), adjustments to current parking operations and management strategies are recommended. These strategies are based on recommended best practices from across North America. Short-term and long-term improvement recommendations are as follows:

Short-Term Recommendations (Next 1 to 2 Years)

1. **Develop Mission, Vision, and Guiding Principles for the Public Parking Program**
2. **Designate a City Department as Responsible for Parking and Work to Create a Unified System Focused on Defined Areas**
3. **Improve Neighborhood Parking**
   - A. **Define Appropriate Street Geometrics**
   - B. **Base Management on Occupancy**
   - C. **Use/Adjust Existing Ordinances First**
   - D. **Involve Residents in Permit Ordinance Development**
4. **Improve Greek Neighborhood Conditions**
   - A. **Improve Use of Existing Parking Spaces**
   - B. **Encourage Other Transportation Options**
   - C. **Add Angled On-Street Parking Where Possible**
5. **Install Directional and Identification Signage to Direct People to Parking**
6. **Improve the Utilization of Available Parking:**
   - A. **Direct Employees to Appropriate Parking**
   - B. **Base Management on Demand**
   - C. **Communicate Availabilities**
7. **Improve Parking Enforcement**
   - A. **Define Performance Standards**
   - B. **Upgrade Technologies**
   - C. **Implement Tiered Fine Structure**
   - D. **Increase Fines and Extend Initial Payment Timeframe**
   - E. **Develop Formal 1st Level Administrative Appeals Process**
8. **Ensure Parking is Safe and Secure, and Adopt Lighting Standards**
9. **Update Parking-Related Zoning Codes**
10. **Improve Parking System Marketing and Communications:**
    - A. **Create Maps**
    - B. **Communicate with Communities**
    - C. **Brand and Market Public Parking**
11. **Begin to Manage Event Parking**
12. **Define Loading and Delivery Needs and Locations**
13. **Encourage the Use of Alternative Forms of Transportation**
    - A. **Encourage a "Park Once – Pedestrian First" Environment**

Long-Term Recommendations (After 2 Years)

1. Refine General Parking Management Strategies to Meet Community and Utilization Goals
2. Add Parking as Needed to Support Development and Community Needs
   - A. Maximize the Efficiency of Existing Lots
   - B. Add Surface Parking
   - C. Construct Parking Structures when Feasible
3. Investigate Opportunities to Create a Community-Based Parking Management Program
4. Develop a Formal Parking Enforcement Policies and Procedures Manual
5. Implement the 1st Level Administrative Appeals Process
6. Develop Strategies to Fund Future Public Parking Needs
   - A. Implement Pay Parking (Based on Demand)
   - B. Financing New Parking Spaces
   - C. Support On-Going Parking Operations and Maintenance
7. Continue to Improve Parking System Marketing and Communications
   - A. Annual Parking System Report
8. Conduct Annual Surveys of Parking Supply and Occupancy
9. Refine Special Event Parking Management Strategies
10. Consider Developing Parking Structure Design Standards
11. Integrate Improved Transportation Demand Management Programs
12. Update and Maintain Parking-Related Wayfinding Signage
13. Install Emergency Call Boxes in Public Parking Facilities/Lots
14. Update Public Parking Mission, Vision and Guiding Principles as Needed
15. Refine Parking-Related Zoning Codes to Meet Future Needs

1.0 INTRODUCTION

1.01. Study Purpose and Approach

The primary purpose of this project is to determine short-term and long-term recommendations to improve a number of parking challenges in Stillwater, Oklahoma. The analysis focuses on two specific study areas, the Business Improvement District (BID) and the Campus Periphery area; however; the parking operational and management recommendations developed during the study can be applied city wide.

The study process includes five separate phases:

- Phase 1: Project start-up, initial site visit, and public input.
- Phase 2: Current parking supply and demand data collection and analysis.
- Phase 3: Projection of future parking demands and alternatives analysis.
- Phase 4: Parking management alternatives analysis.
- Phase 5: Draft and final reports and presentations.

Phases 1 and 2 of the project include an assessment of existing parking management conditions, determined primarily through reviews of background materials, detailed parking inventory and occupancy surveys, and stakeholder input meetings. The examination of existing conditions provides the baseline data from which future developments, with associated impacts on parking supply and demand, can be evaluated (Phase 3). Phase 4 involves the development of parking improvement alternatives to address current and future needs, as well as improve the utilization and efficiency of existing parking resources. Future alternatives include potential parking supply changes, as well as general parking operations and management strategies and improvements.

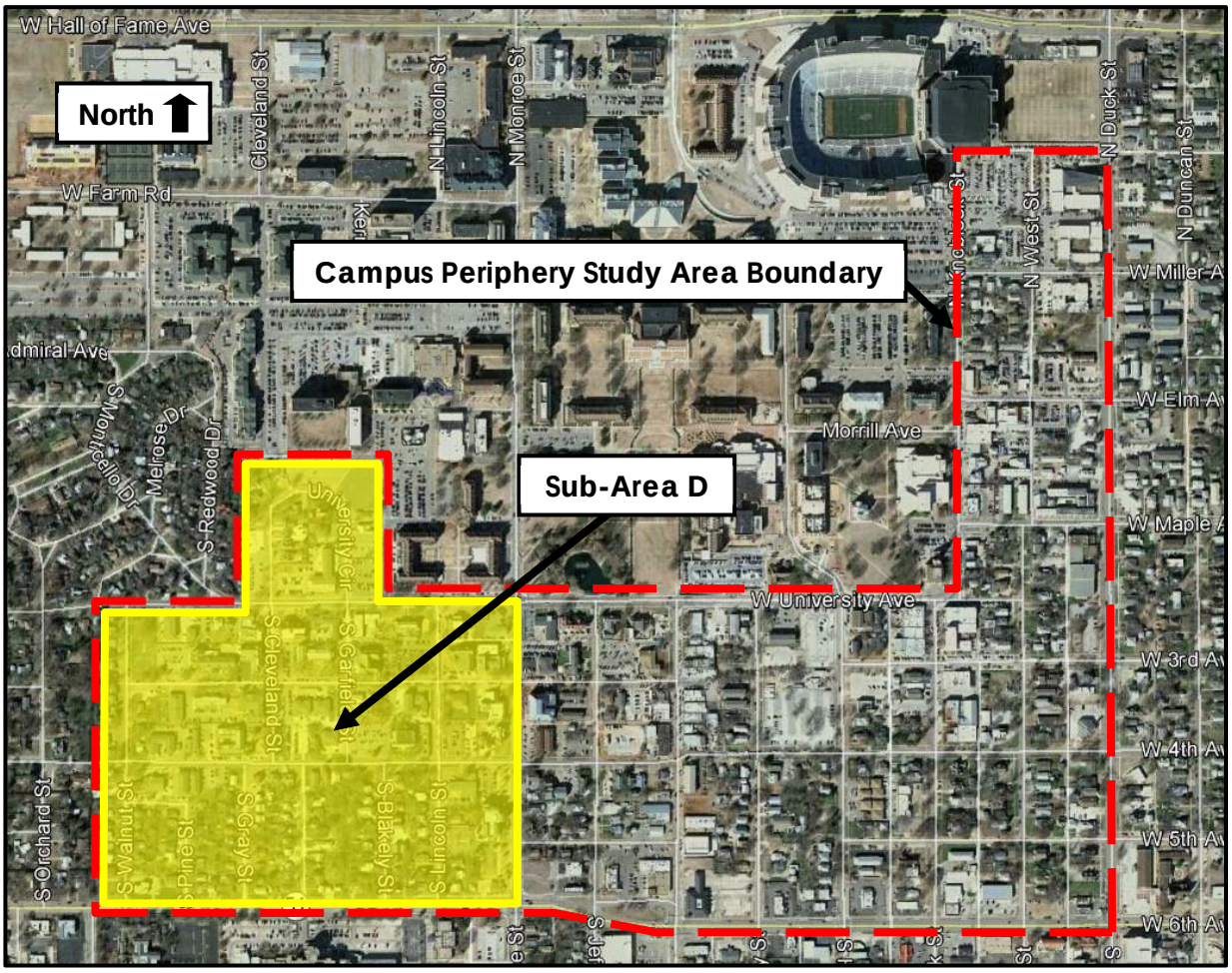
1.02. Designated Study Areas

Two primary study areas are covered in this analysis. One study area covers the boundaries of the BID in Downtown Stillwater. Figure 1, on the next page, depicts the general boundaries of the BID Study Area.

The Campus Periphery area shown in Figure 2, on page 3, has been divided with a Sub-Area D for the analysis. Sub-Area D in the campus periphery area is almost entirely a residential area. Fraternities, sororities, private apartment buildings and individual homes are found in the densely populated area adjacent to the Oklahoma State University campus. Most of the commercial land uses in the Campus Periphery Area are located along Washington Street and Knoblock Street in the “Campus Corner” neighborhood.

Figure 1: BID Study Area (Downtown Stillwater)

Figure 2: Campus Periphery Study Area



2.0 CURRENT PARKING SUPPLY AND DEMAND

2.01. Current Parking Supply

An inventory of parking spaces in the each study area was completed on Tuesday September 18, 2012. The inventory included both on-street and off-street parking spaces. Parking facilities serving residential properties were excluded from the larger inventory process (e.g., residential driveways). Because Sub-Area D of the Campus Periphery Area is predominately residential (single family and multi-residential), the on-street inventory of spaces is presented separately.

It is important that a supply of parking spaces include a cushion in excess of the actual number of spaces needed to satisfy demand. The cushion of spaces allows for vacancies created by: restricting facilities to designated users, improperly parked vehicles, spaces lost to construction, the dynamics of parking and unparking, and to reduce the time needed to search for the last few available spaces. A parking system typically operates at optimum efficiency when occupancy is at 85% to 95% (depending on the user groups served). If this cushion is not provided, there will likely be a perception of a parking shortage even though empty spaces may exist. If an adequate cushion is provided, it will be easier to locate open spaces. If the cushion is too large, the least convenient spaces will rarely be filled.

For these reasons it is acceptable practice to have a parking supply approximately 5% to 15% over the actual parking demand. To accommodate a cushion of spaces, the "effective" supply of spaces is used to determine the adequacy of the parking supply, rather than the actual inventory of spaces. In Stillwater an 85% factor is appropriate for on-street parking. The 85% factor incorporates the largest operating cushion into the planning process and provides the best level of service. A 90% factor is appropriate for the off-street facilities as the circulation to locate an available space is typically easier in an off-street lot.

Prior to conducting the parking inventory and occupancy surveys, each study area was divided by block. Then, each block was identified using a letter to signify the study area and a number for the block. The block identifiers are used throughout this report to refer to both on-street and off-street parking areas by block. Figures 3 and 4 (pages 5 and 6) illustrate the block identifiers for each primary study area. Figure 5 on page 7 illustrates the block identifiers for Sub-Area D (Greek Neighborhood and mixed residential).

Public parking refers to parking that is owned by the city. Private parking refers to parking owned by a private entity.

Figure 3: BID Study Area Block Identifiers (Downtown Stillwater)

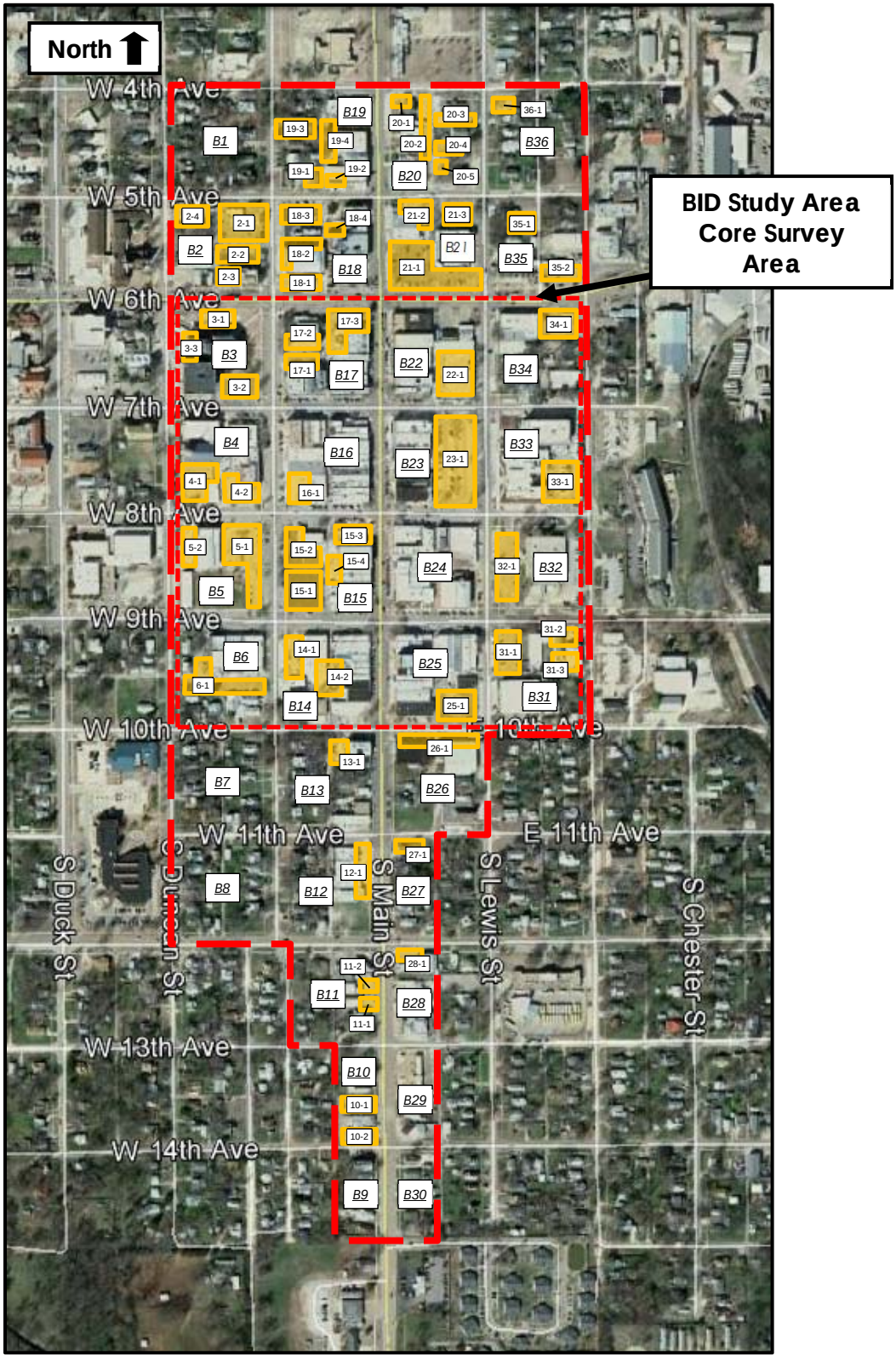


Figure 4: Campus Periphery Study Area Block Identifiers (Southeast Corner of OSU)

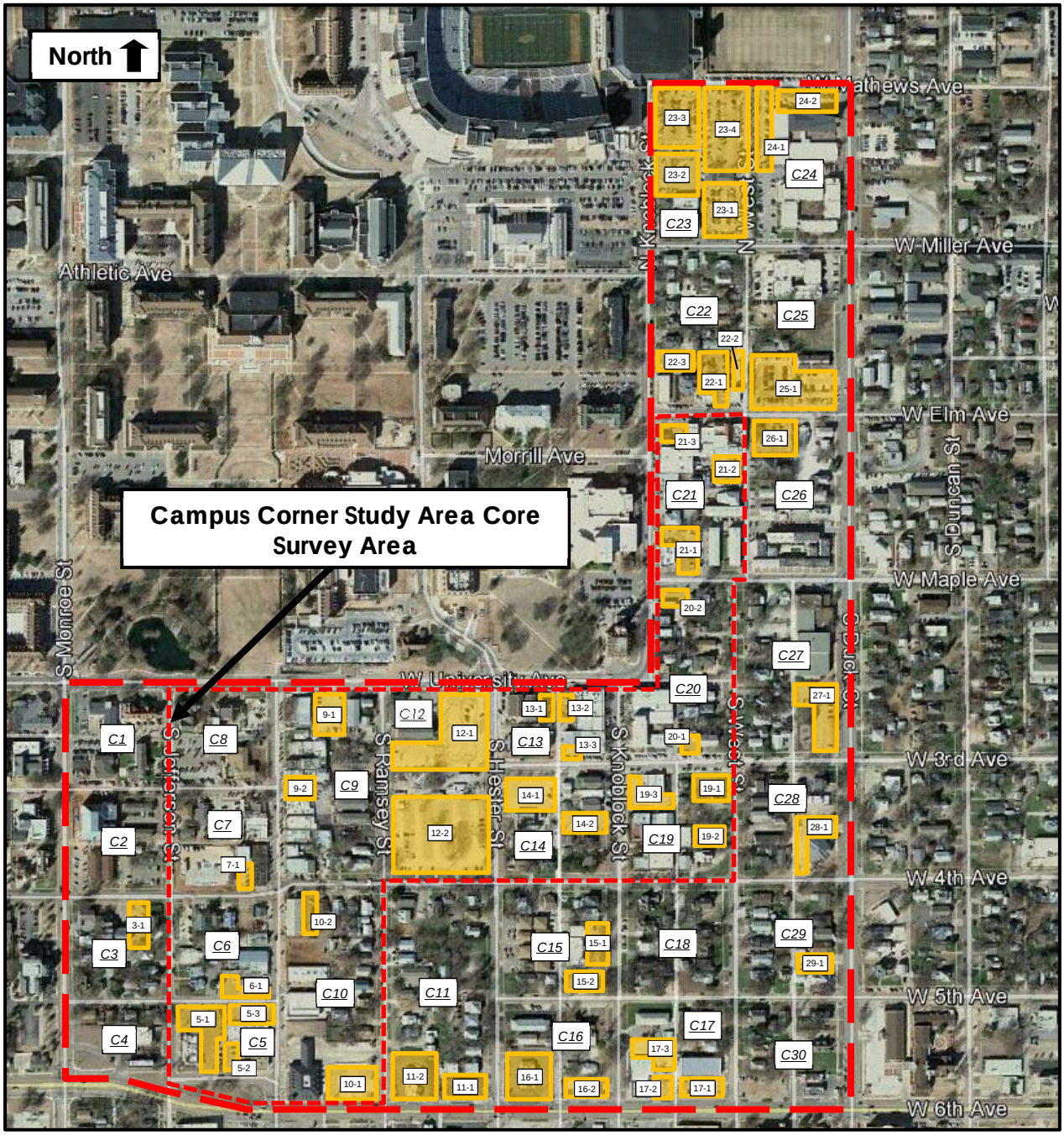
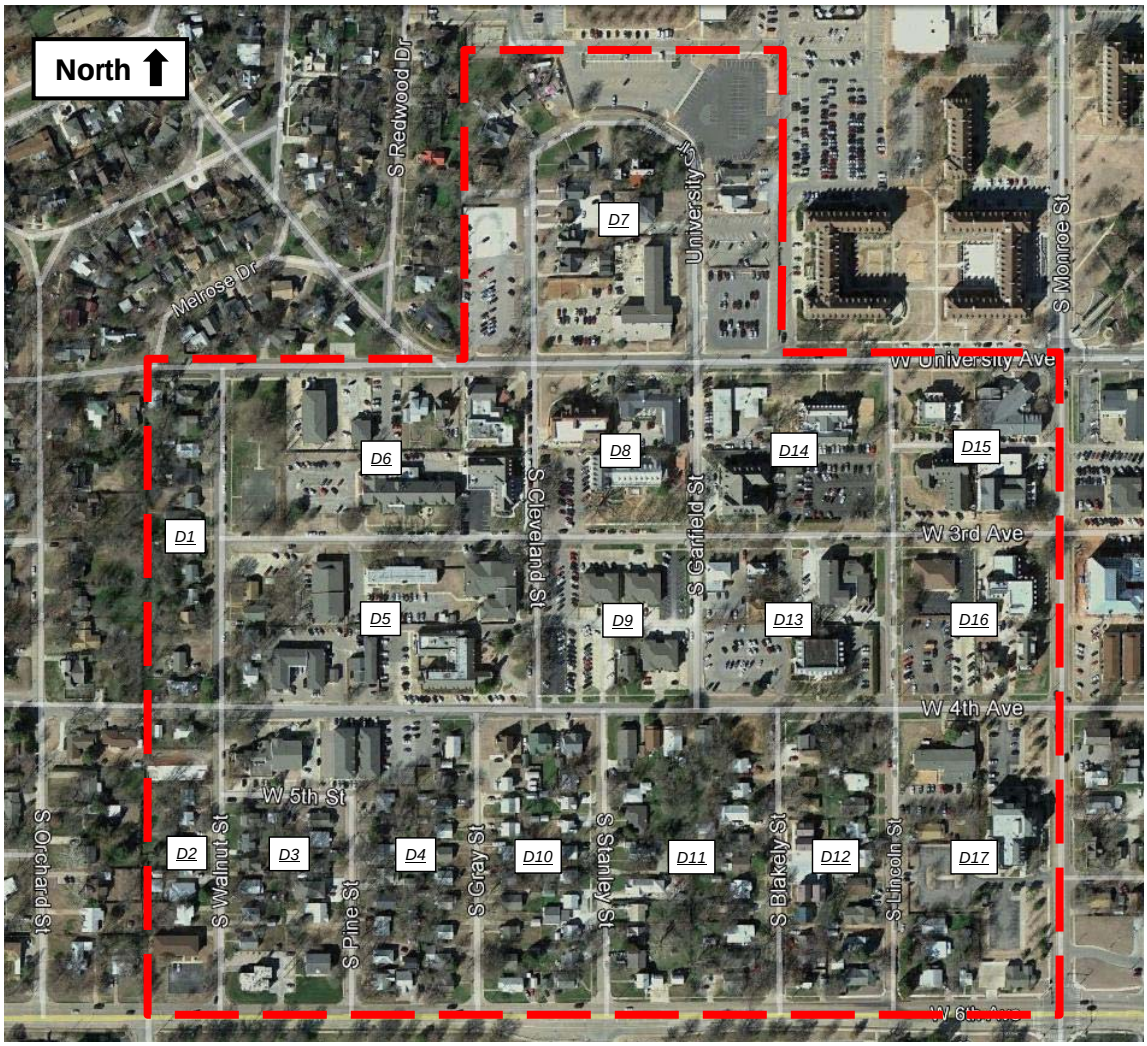


Figure 5: Sub-Area D Study Area Block Identifiers (Greek and Mixed Residential)



2.01.1 BID Area

Table 1, on the next page, lists the inventory of on-street spaces by block for the BID Study Area. There are approximately 1,245 on-street parking spaces in the BID area. Applying the 85% effective supply factor results in a total effective supply of about 1,058 spaces.

About 473 or 38% of the on-street spaces are unrestricted with no time limits. The unrestricted spaces are in large part located away from the core of the downtown area. Approximately 35% of the spaces have time restrictions of 90 minutes or less. Spaces with longer time restrictions comprise about 27%, or 331 spaces, of the total. Figure 3 shows the relative locations of the on-street spaces by block and block face (by direction).

Table 1: BID Study Area On-Street Parking Supply (Downtown Stillwater)

Block	Block Face	Actual Capacity	85% Effective Supply	Restrictions
B 1	North	9	8	None
B 1	South	15	13	None
B 1	East	11	9	None
B 2	North	10	9	None
B 2	East	4	3	None
B 2	West	5	4	3 Hour
B 3	South	11	9	2 Hour
B 3	East	26	22	90 Minute
B 3	West	8	7	Reserved
B 4	North	23	20	90 Minute
B 4	South	4	3	None
B 4	East	24	20	90 Minute
B 4	West	6	5	90 Minute
B 5	North	21	18	None
B 5	South	16	14	None
B 5	East	19	16	None
B 5	West	22	19	None
B 6	North	26	22	3 Hour
B 6	South	4	3	None
B 6	East	4	3	None
B 6	West	7	6	None
B 7	North	9	8	None
B 7	South	6	5	None
B 7	East	11	9	None
B 7	West	10	9	None
B 8	North	12	10	None
B 8	East	10	9	None
B 8	West	10	9	None
B 9	North	8	7	None
B 9	East	6	5	None
B 10	North	5	4	None
B 10	East	5	4	None
B 11	South	10	9	None
B 11	East	4	3	None
B 11	West	8	7	None
B 12	North	5	4	None
B 12	West	7	6	None
B 13	South	8	7	None
B 13	East	15	13	3 Hour
B 13	West	12	10	None
B 14	North	16	14	3 Hour
B 14	South	16	14	3 Hour
B 14	East	19	16	3 Hour
B 14	West	11	9	3 Hour
B 15	North	7	6	90 Minute
B 15	South	19	16	3 Hour
B 15	East	17	14	90 Minute
B 15	West	11	9	90 Minute
B 16	North	20	17	90 & 30 Minute
B 16	South	14	12	90 Minute
B 16	East	18	15	90 Minute
B 16	West	17	14	90 Minute
B 17	South	20	17	90 Minute
B 17	East	17	14	90 Minute
B 17	West	15	13	90 Minute
B 18	North	16	14	3 Hour
B 18	East	16	14	3 Hour
			0	
B 19	East	8	7	None
B 20	North	8	7	None
B 20	South	4	3	None
B 20	East	12	10	None
B 20	West	12	10	None
B 21	West	10	9	3 Hour
B 22	South	7	6	90 Minute
B 22	East	15	13	3 Hour
B 22	West	13	11	90 Minute
B 23	North	15	13	90 Minute
B 23	South	15	13	90 Minute
B 23	East	25	21	90 Minute
B 23	West	18	15	90 Minute
B 24	North	19	16	90 Minute
B 24	South	18	15	3 Hour
B 24	East	17	14	3 Hour
B 24	West	19	16	90 Minute
B 25	North	13	11	3 Hour
B 25	South	8	7	3 Hour
B 25	East	22	19	3 Hour
B 25	West	19	16	3 Hour
B 26	North	15	13	None
B 26	South	11	9	None
B 26	East	24	20	None
B 26	West	26	22	None
B 27	West	18	15	None
B 28	North	6	5	None
B 28	West	5	4	None
B 31	North	6	5	None
B 31	West	22	19	None
B 32	North	13	11	90 Minute
B 32	West	9	8	90 Minute
B 33	North	10	9	90 Minute
B 33	South	10	9	90 Minute
B 33	West	25	21	90 Minute
B 34	South	16	14	3 Hour
B 34	West	23	20	3 Hour
B 35	West	4	3	None
	TOTAL SPACES	**1,245**	**1,058**	

Space Breakdown		
90 Minutes or Less	433	35%
2 Hour	11	1%
3 Hour	320	26%
No Restrictions	473	38%
Reserved	8	1%

Figure 3 (page 5), shows the off-street parking facilities that are located in the BID Study Area (areas shaded in gray). Table 2, on page 10, presents a tabulation of the off-street parking inventory by block. There are a total of 1,238 off-street parking spaces in the BID Study Area. Using the 90% effective supply factor results in an effective supply of about 1,114 spaces. As noted earlier, residential parking areas are not included. In addition, parking areas serving automobile service and repair shops and automobile dealerships are not included.

Of the total off-street parking supply, approximately 170 spaces (13.7%) are located in city-owned parking lots. The remaining spaces (1,068 spaces or 86.3% of the available supply) are privately-owned.

Some parking areas could not be accurately inventoried, as they lacked parking stripes or existing stripes were not visible. In these situations, inventories were estimated based on the size of the parking area.

Table 2: BID Study Area Off-Street Parking Supply (Downtown Stillwater)

Block & Lot	Description	Actual Capacity	90% Effective Supply
B 2 - 1	Restaurant	54	49
B 2 - 2	Ocean Dental	14	13
B 2 - 3	Ocean Dental	5	5
B 2 - 4	Office	6	5
B 2 - 5	Office	14	13
B 3 - 1	Courthouse - Police	17	15
B 3 - 2	Courthouse	27	24
B 3 - 3	Courthouse - Police	7	6
			0
B 4 - 1	Church	42	38
B 4 - 2	Construction Site	0	0
B 5 - 1	City Lot	61	55
B 5 - 2	Unpaved Lot	15	14
B 6 - 1	Misc. Businesses	45	41
B 6 - 2	Retail	3	3
B 10 - 1	Church	11	10
B 10 - 2	Misc. Businesses	26	23
B 11 - 1	Business	4	4
B 11 - 2	Business	4	4
B 12 - 1	Misc. Businesses	17	15
B 13 - 1	Office	6	5
B 14 - 1	Office Supply	24	22
B 14 - 2	Misc. Businesses	11	10
B 15 - 1	Bank	54	49
B 15 - 2	Bank	16	14
B 15 - 3	Bank	20	18
B 15 - 4	Bank & Businesses	9	8
B 16 - 1	Office	19	17
B 17 - 1	Office	25	23
B 17 - 2	Office	11	10
B 17 - 3	Bank	24	22
B 18 - 1	Office	16	14
B 18 - 2	Office	14	13
B 18 - 3	Telecom Office	37	33
B 18 - 4	Telecom Office	8	7
B 19 - 1	Office	4	4
B 19 - 2	Retail	5	5
B 19 - 3	Office	27	24
B 19 - 4	Misc. Businesses	15	14
B 20 - 1	Office	3	3
B 20 - 2	Misc. Businesses	20	18
B 20 - 3	Misc. Businesses	17	15
B 20 - 4	Office	4	4
B 20 - 5	Office	7	6
B 21 - 1	Retail	25	23
B 21 - 2	Business	15	14
B 21 - 3	Retail	10	9
B 22 - 1	Private Structure	90	81
B 23 - 1	City Lot	87	78
B 25 - 1	Office	28	25
B 26 - 1	Retail	15	14
B 27 - 1	Retail	6	5
B 28 - 1	Retail	7	6
B 31 - 1	City Lot	22	20
B 31 - 2	Business	5	5
B 31 - 3	Business	5	5
B 32 - 1	Post Office	37	33
B 33 - 1	City Vehicles	58	52
B 34 - 1	Retail	35	32
B 35 - 1	Office	6	5
B 35 - 2	Business	15	14
B 36 - 1	Office	4	4
	TOTALS	**1,238**	**1,114**

2.01.2 Campus Periphery Area

Figure 4 (page 6) shows the blocks in the Campus Periphery Area (Campus Corner section) that were inventoried on September 18, 2012.

Table 3 below presents the inventory of on-street spaces in the Campus Corner section of the Campus Periphery area. There are a total of approximately 646 on-street parking spaces. The effective supply, using an 85% factor, is approximately 549 spaces.

Table 3: Campus Periphery Study Area On-Street Parking Supply (Campus Corner)

On-Street Block	Block Face	Actual Capacity	85% Effective Supply
C 1	South	25	21
C 4	North	10	9
C 5	North	21	18
C 5	South	6	5
C 5	East	7	6
C 6	South	2	2
C 6	East	9	8
C 6	West	8	7
C 7	North	9	8
C 7	East	12	10
C 7	West	7	6
C 8	South	9	8
C 8	West	6	5
C 9	South	6	5
C 9	East	18	15
C 9	West	31	26
C 10	East	12	10
C 10	West	20	17
C 12	South	6	5
C 13	South	16	14
C 13	East	10	9
C 14	North	14	12
C 14	South	10	9
C 14	East	14	12
C 15	South	10	9
C 16	North	18	15
C 17	East	8	7
C 18	South	11	9
C 18	East	12	10
C 19	North	12	10
C 19	South	12	10
C 19	East	10	9
C 19	West	16	14
C 20	South	20	17
C 20	East	13	11
C 20	West	20	17
C 20	Mid Block	21	18
C 21	North	7	6
C 21	West	11	9
C 22	South	9	8
C 22	West	14	12
C 23	North	18	15
C 23	East	19	16
C 23	West	20	17
C 24	North	15	13
C 24	West	16	14
C 25	North	3	3
C 25	South	8	7
C 25	West	5	4
C 27	North	8	7
C 27	South	4	3
C 28	South	4	3
C 29	South	5	4
C 30	North	9	8
TOTALS		**646**	**549**

Table 4 shows the inventory of on-street parking spaces in Sub-Area D of the Campus Periphery Area. There are approximately 223 on-street parking spaces in the area with an effective supply of about 190 spaces. Figure 5 on page 7 shows the block numbers for Sub-Area D.

Table 4: Sub-Area D Study Area On-Street Parking Supply (Greek and Mixed Residential)

On-Street Block	Block Face	Actual Capacity		85% Effective Supply
D 3	North	6		5
D 3	East	10		9
D 3	West	9		8
D 4	West	3		3
D 5	East	9		8
D 5	West	9		8
D 6	South	16		14
D 6	East	13		11
D 6	West	12		10
D 7	North	20	(1)	17
D 8	South	16		14
D 8	East	10		9
D 9	East	8		7
D 11	East	19		16
D 11	West	15		13
D 13	North	6		5
D 15	West	7		6
D 16	North	9		8
D 16	West	9		8
D 17	West	17		14
	TOTALS	**223**		**190**

Notes
(1) OSU Staff Only

Table 5, on the next page, presents a tabulation of the off-street parking inventory by block for the Campus Periphery Study Area. There are a total of 1,727 off-street parking spaces in the area. Using the 90% effective supply factor results in an

effective supply of about 1,554 spaces. As noted earlier, residential parking areas are not included. There is no publicly-owned off-street parking in this area.

Some parking areas could not be accurately inventoried, as they lacked parking stripes or existing stripes were not visible. In these situations, inventories were estimated based on the size of the parking area.

Table 6, on page 14, shows the inventory of off-street parking facilities in Sub-Area D. Residential parking facilities including fraternities, sororities, and privately owned residential properties were not included in the inventory. The land uses and the supporting parking areas are clearly dominated by the "Greek System" residences and the private residential housing.

Table 5: Campus Periphery Study Area Off-Street Parking Supply (Campus Corner)

Block & Lot	Description	Actual Capacity	90% Effective Supply
C 3 - 1	Retail	10	9
C 5 - 1	Fast Food	45	41
C 5 - 2	Retail	18	16
C 5 - 3	Laundry	20	18
C 6 - 1	Retail	4	4
C 7 - 1	Business	14	13
C 9 - 1	Foundation	30	27
C 10 - 1	Bank	46	41
C 10 - 2	Misc. Businesses	13	12
C 11 - 1	Fast Food	10	9
C 11 - 2	Fast Food	28	25
C 12 - 1	OSU - Commuter	318	286
C 12 - 2	OSU - Permit	137	123
C 13 - 1	Medical Office	9	8
C 13 - 2	Employee	17	15
C 13 - 3	Employee	6	5
C 14 - 1	Church Permit	92	83
C 14 - 2	Church	32	29
C 15 - 1	Medical Office	15	14
C 15 - 2	Medical Office	17	15
C 16 - 1	Fast Food	50	45
C 16 - 2	Misc. Businesses	14	13
C 17 - 1	Retail	25	23
C 17 - 2	Fast Food	10	9
C 17 - 3	Retail	27	24
C 19 - 1	Vacant Lot	30	27
C 19 - 2	Church	20	18
C 19 - 3	Church	32	29
C 20 - 1	Church	6	5
C 20 - 2	Fast Food	4	4
C 21 - 1	Fast Food	29	26
C 21 - 2	Restaurant	25	23
C 21 - 3	Retail	7	6
C 22 - 1	Restaurant	40	36
C 22 - 2	Restaurant	13	12
C 22 - 3	Retail	10	9
C 23 - 1	Church	63	57
C 23 - 2	Church	60	54
C 23 - 3	OSU	45	41
C 23 - 4	OSU	77	69
C 24 - 1	Church	45	41
C 24 - 2	Church	18	16
C 25 - 1	Restaurant	73	66
C 26 - 1	Restaurant	38	34
C 27 - 1	YMCA	49	44
C 28 - 1	Bank	26	23
C 29 - 1	Business	10	9
	TOTAL SPACES	**1,727**	**1,554**

Table 6: Sub-Area D Study Area Off-Street Parking Supply (Greek and Mixed Residential)

Block & Lot	Description	Actual Capacity	90% Effective Supply
D 7 - 1	OSU - Staff	50	45
D 7 - 2	OSU - Staff	23	21
D 7 - 3	OSU - Staff	89	80
D 7 - 4	OSU - Staff	70	63
D 17 1	OSU Foundation	57	51
D 17 2	OSU Foundation	21	19
	TOTALS	**310**	**279**

Note:
Residential parking facilities not included.

2.02. Current Observed Parking Demand – All Areas

Parking occupancy surveys were conducted for sample areas of each study area on September 19 and 20, 2012. Sampled areas included core areas in the BID and in the Campus Corner area. Hourly occupancy counts were conducted from 8:00 a.m. through 4:00 p.m. on both days. Figures 3 and 4 (pages 5 and 6) include the boundaries of the areas included in the occupancy surveys.

The completed surveys provided a "snapshot" of parking occupancy and did not attempt to determine the absolute peak parking period for any study area. It is recommended to conduct additional occupancy counts in the near future to gather additional data during evenings, weekends, and special events. Additional occupancy counts in the Greek Neighborhood would also be recommended during house events and on Monday evenings to provide additional parking management data.

Table 7 (next page) summarizes the on-street and off-street occupancy counts for the BID Study Area. Counts were conducted on Wednesday (9/19/12) and Thursday (9/20/12). Detailed data concerning the occupancy counts are included as appendices. Overall, the on-street spaces surveyed were about 50% occupied on both days. The overall peak occupancy was just under 60% occupied on Wednesday and slightly lower on Thursday. On Wednesday, 22 of the 54 surveyed block faces had on-street occupancy levels that exceeded or were equal to the effective supply (85% of actual capacity). Those block faces were likely judged "full" by some drivers. Occupancies of over 100% were recorded in several locations. Occupancies exceeding 100% occur when vehicles are parked illegally.

The off-street parking facilities that were surveyed in the BID Study Area had similar occupancy levels, about 50% occupied overall. Again, some facilities had higher occupancy rates. Six of the 28 surveyed facilities had observed occupancies higher than or equal to the effective supply of 90%.

Table 7: BID Study Area Occupancy Survey Results (Downtown Stillwater)

Survey Date	Surveyed Capacity	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	Average Occupancy	Peak Occupancy
ON-STREET PARKING												
9/19/2012	835	264	394	429	403	443	492	478	465	461	51%	59%
		32%	47%	51%	48%	53%	59%	57%	56%	55%		
9/20/2012		237	391	417	409	372	390	419	389	457	46%	55%
		28%	47%	50%	49%	45%	47%	50%	47%	55%		
On-Street Surveyed Average		**251**	**393**	**423**	**406**	**408**	**441**	**449**	**427**	**459**	**49%**	
		30%	47%	51%	49%	49%	53%	54%	51%	55%		
OFF-STREET PARKING												
9/19/2012	797	322	403	440	440	375	438	430	400	372	50%	55%
		40%	51%	55%	55%	47%	55%	54%	50%	47%		
9/20/2012		320	390	397	397	342	390	405	388	367	47%	51%
		40%	49%	50%	50%	43%	49%	51%	49%	46%		
Off-Street Surveyed Average		**321**	**397**	**419**	**419**	**359**	**414**	**418**	**394**	**370**	**49%**	
		40%	50%	53%	53%	45%	52%	52%	49%	46%		

The available city-owned off-street parking supply of 170 parking spaces was well-utilized during the Wednesday occupancy survey. The overall city-owned parking supply was 75.3% utilized at 11:00 a.m. on Wednesday (128 spaces). On Thursday, the peak parking occupancy in city-owned parking lots was 111 spaces (65.3%) at 11:00 a.m.

Table 8 (next page) similarly presents a summary of the occupancy surveys for the Campus Periphery Study Area. Detailed data on the survey results are also included as appendices. Overall, the surveyed on-street and off-street parking spaces in the Campus Corner portion of the Campus Periphery Study Area had higher occupancy levels than the BID Study Area. The on-street spaces overall were about 59% occupied and the off-street facilities were about 54% occupied. On Wednesday, 20 of the 32 surveyed block faces had occupancy levels that exceeded the 85% effective supply.

Table 8: Campus Periphery Study Area Occupancy Survey Results (Campus Corner)

Surveyed Date	Surveyed Capacity	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	Average Occupancy	Peak Occupancy
ON-STREET PARKING												
9/19/2012	395	162	195	247	257	302	279	249	238	243	61%	76%
		41%	49%	63%	65%	76%	71%	63%	60%	62%		
9/20/2012	381	125	178	196	220	246	256	248	223	236	56%	67%
		33%	47%	51%	58%	65%	67%	65%	59%	62%		
On-Street Surveyed Average		**144**	**187**	**222**	**239**	**274**	**268**	**249**	**231**	**240**	**59%**	
		37%	48%	57%	61%	71%	69%	64%	59%	62%		
OFF-STREET PARKING												
9/19/2012	954	299	462	585	648	633	635	581	525	429	56%	68%
		31%	48%	61%	68%	66%	67%	61%	55%	45%		
9/20/2012		229	463	599	609	599	610	595	518	441	54%	64%
		24%	49%	63%	64%	63%	64%	62%	54%	46%		
Off-Street Surveyed Average		**264**	**463**	**592**	**629**	**616**	**623**	**588**	**522**	**435**	**54%**	
		28%	48%	62%	66%	65%	65%	62%	55%	46%		

Table 9 (adjacent) shows the observed on-street occupancy levels that were recorded during the inventory process on October 19 and 20. The inventory was performed between the hours of 1 pm and 3pm. Nearly every block face in Sub Area D had occupancies that exceeded the effective supply of on-street spaces.

Table 9: Sub-Area D Study Area On-Street Occupancy Survey Results (Greek and Mixed Residential)

On-Street Block	Block Face	Actual Capacity		85% Effective Supply	Observed Occupancy
D 3	North	6		5	6
D 3	East	10		9	4
D 3	West	9		8	8
D 4	West	3		3	3
D 5	East	9		8	9
D 5	West	9		8	8
D 6	South	16		14	15
D 6	East	13		11	13
D 6	West	12		10	10
D 7	North	20	(1)	17	19
D 8	South	16		14	8
D 8	East	10		9	6
					8
D 9	East	8		7	
D 11	East	19		16	18
D 11	West	15		13	14
D 13	North	6		5	6
D 15	West	7		6	7
D 16	North	9		8	9
D 16	West	9		8	9
D 17	West	17		14	16
TOTALS		**223**		**190**	**196**

Notes
(1) OSU Staff Only
= Occupancies greater than 85%

Table 10 similarly shows the observed occupancy levels of the non-residential parking facilities in Sub-Area D. All of the non-residential parking facilities are associated with Oklahoma State University (OSU). The overall occupancy of these facilities was at the 90% effective supply level.

The residential parking facilities in Sub Area D are also very well used. Many of the lots were filled to capacity during the inventory process and subsequent drive through observations. While some of the lots were not filled to capacity, numerous instances of parking on lawns and other non-designated parking areas were observed. Overall, the residential parking facilities in the area were well used and should be considered full.

Table 10: Sub-Area D Study Area Off-Street Occupancy Survey Results (Greek and Mixed Residential)

Block & Lot	Description	Actual Capacity	90% Effective Supply	Observed Occupancy
D 7 - 1	OSU - Staff	50	45	40
D 7 - 2	OSU - Staff	23	21	22
D 7 - 3	OSU - Staff	89	80	87
D 7 - 4	OSU - Staff	70	63	59
D 17 1	OSU Foundation	57	51	54
D 17 2	OSU Foundation	21	19	17
TOTALS		**310**	**279**	**279**

Note:
Residential parking facilities not included.

= Occupancies greater than 90%

The following figures on page 18 (Figures 6 and 7) illustrate the off-street parking utilization in each primary sample area during the average peak period of observed parking. Figures 8 and 9 on page 19 illustrate the on-street parking utilization in each primary sample area during the average peak period of observed parking. As stated previously, the on-street and off-street parking supplies in Sub-Area D appeared fully utilized during the survey period.

Figure 6: BID Area: Off-Street Survey Sample – Occupancy at Avg. Peak (2:00 p.m.)

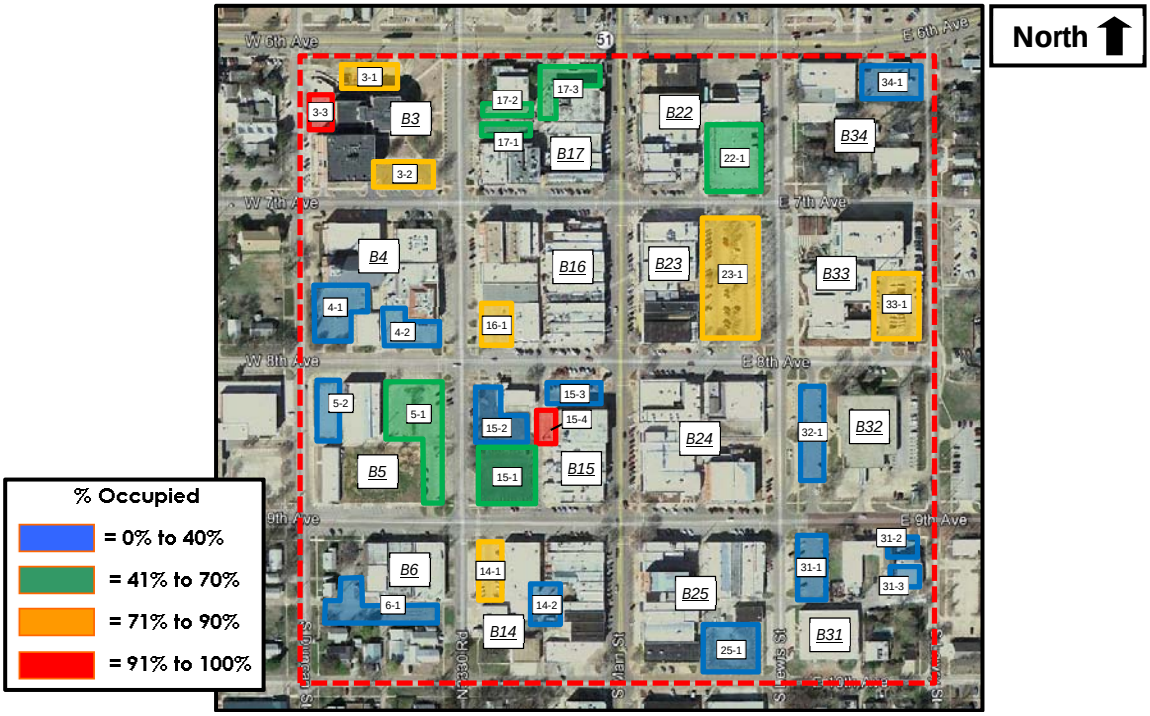


Figure 7: Campus Periphery Area: Off-Street Survey Sample – Occ. at Avg. Peak (1:00 p.m.)

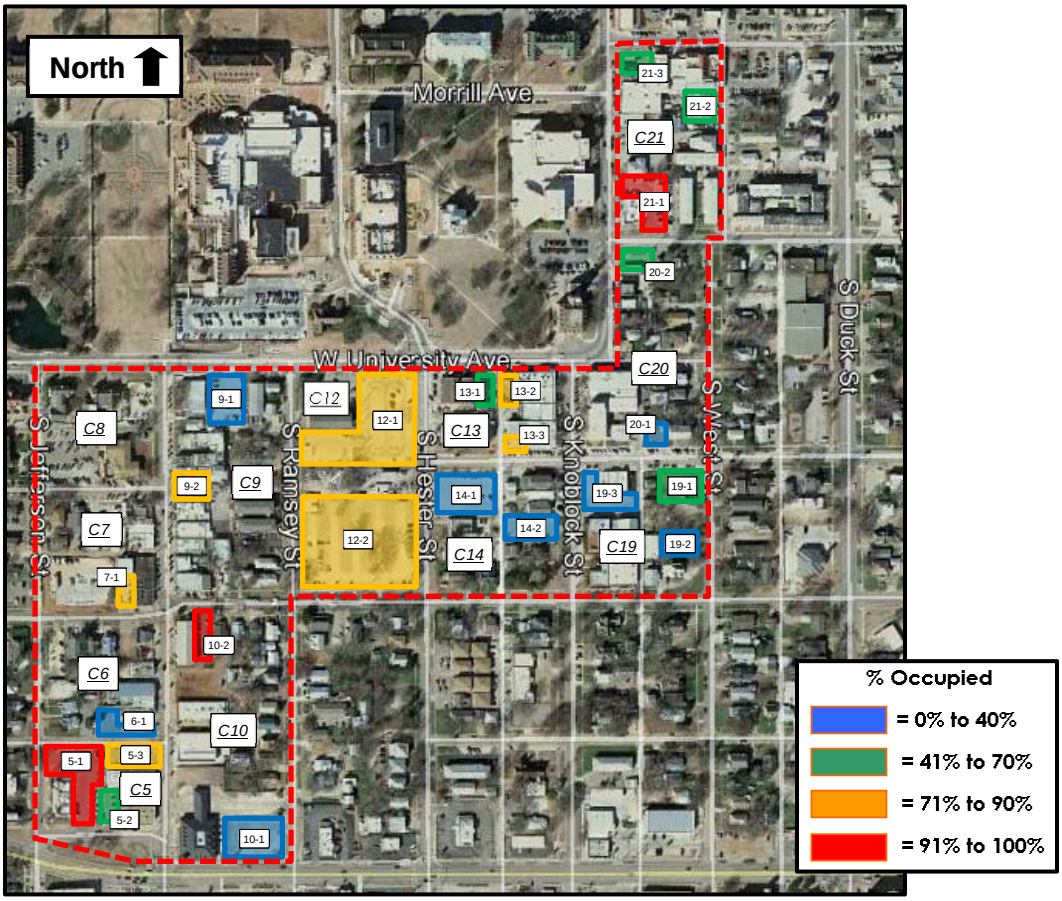


Figure 8: BID Area: On-Street Survey Sample – Occupancy at Avg. Peak (2:00 p.m.)

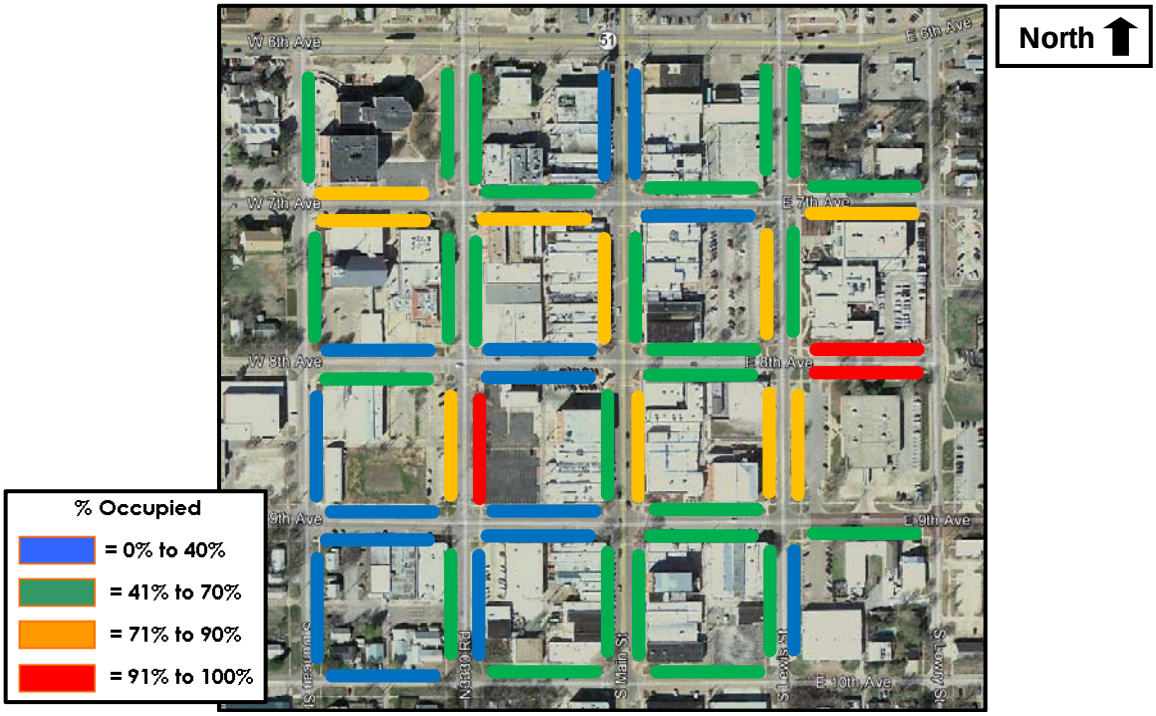
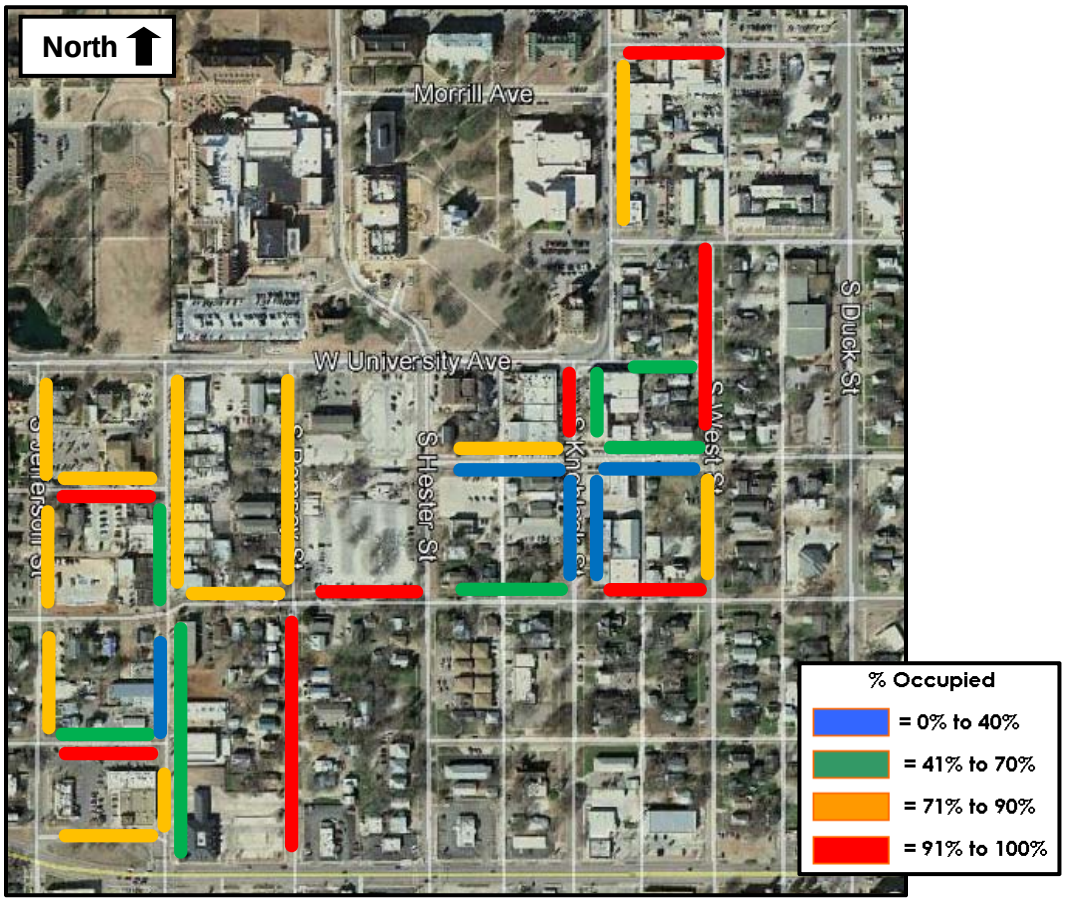


Figure 9: Campus Periphery Area: On-Street Survey Sample – Occ. at Avg. Peak (1:00 p.m.)



2.03. Current Observed Parking Adequacy

Based on the occupancy data collected during the September site visit, it appears that there is a significant amount of underutilized parking in each study area (except Sub-Area D). The overall parking adequacy for an area is typically estimated using the effective supply factors previously detailed and additional design day adjustments, as needed. Design day parking conditions attempt to represent typical peak activity that may be exceeded only occasionally during the year. Due to the limited nature of the occupancy study for this project, as well as the lack of available information concerning historical parking utilization/activity, specific design day adjustments cannot be calculated.

In the BID Study Area sample, the average peak parking demand occurred at 2:00 p.m. when an average of 867 spaces were occupied. With an effective supply of approximately 1,427 spaces (surveyed spaces, not the total study area supply), there was a surplus of approximately 560 parking spaces in the sample area. Approximately 61% of the available effective parking supply was occupied at 2:00 p.m.

In the Campus Periphery Study Area sample, the average peak parking demand occurred at 1:00 p.m. when an average of 891 spaces were occupied. With an effective supply of approximately 1,189 (surveyed spaces, not the total study area supply), there was a surplus of approximately 298 parking spaces in the sample area. Approximately 75% of the available effective parking supply was occupied at 1:00 p.m.

In the Campus Periphery Study Area, if the supply and occupancy for the parking facilities provided by churches are excluded the off-street occupancy levels are slightly higher. The resulting peak overall occupancy in the off-street facilities rises from about 65% occupied to about 75% occupied. The average observed occupancy rate in the off-street lots increases from about 55% occupied to about 63% occupied. Without the church parking lot supply and demand, the surplus of spaces is reduced to about 258 spaces.

Both the on-street and off-street parking supplies in the Sub-Area D section of the Campus Periphery Study Area were effectively full during the field counts. This includes the on-street spaces, parking located in surveyed off-street lots, and parking associated with fraternities and sororities.

While there is an overall parking surplus in each sample area (except Sub Area D), there are numerous blocks in each area with parking occupancies exceeding the available effective parking supplies. The observed parking occupancies for each sample block are shown in the appendices of this report.

3.0 FUTURE PARKING CONDITIONS

3.01. Anticipated Future Development Projects

Currently, the City of Stillwater has several anticipated future development projects in the construction or planning stages that will impact parking in the study areas. These projects include residential, office, and theater projects. The anticipated potential developments impacting the parking study areas are:

8. Fourth and Hester (Residential)

A six-story residential complex is currently under construction on Block C-14 (4th Avenue and Hester Street). The new development will include 106 residential units. There will be 59 one-bedroom units, 37 two-bedroom units, and 10 three-bedroom units (total of 163 bedrooms). The development will include the construction of a 180-space parking garage for residents and guests – approximately 1.1 parking spaces per bedroom or 1.7 spaces per unit. The development is currently providing sufficient parking to meet City of Stillwater requirements and will be parked on-site. While there will likely be some on-street parking by residents and guests (at least for short periods of time), no significant spillover of parking is anticipated. It is anticipated that this development will be completed by the fall of 2013.

9. Duncan and Elm (Residential)

A five-story residential complex is currently anticipated just outside of the Campus Periphery Study Area on Duncan Street and Elm Avenue. The new development is anticipated to include 233 residential units. There will be 155 one-bedroom units and 78 two-bedroom units (total of 311 bedrooms). The proposed development will include the construction of a 311-space parking garage for residents and guests – approximately 1.0 parking space per bedroom or 1.3 spaces per unit. The development is anticipated to include sufficient parking to meet City of Stillwater requirements and will be parked on-site. While there will likely be some on-street parking by residents and guests (at least for short periods of time), no significant spillover of parking is anticipated. While the timeframe for this project has not been finalized, it is currently anticipated that this development will be completed by the fall of 2014.

10. Oklahoma State University Performing Arts Center

The Oklahoma State University's (OSU) five-year plan currently includes the development of a new Performing Arts Center on the northwest corner of 4th Avenue and Hester Street (Block C-12). The site is currently used as surface parking (approximately 455 OSU permit parking spaces in two lots). The 145,000 square foot facility is currently anticipated to include a 250-seat recital hall and a 1,000-seat concert hall, in addition to faculty offices, practice rooms/studios, and

rehearsal halls. The development will include the construction of new 500-space parking facility. The exact timeframe for project completion is not currently known.

11. Surface Parking Lot (northeast corner of Monroe Street and Third Avenue)

OSU is currently considering the construction of a small 26 to 31 space surface parking lot on the northeast corner of 3rd Avenue and Monroe Street in the Campus Periphery Study Area (Block C-1). The parking lot would be constructed after the removal of a small surface lot (approximately 16 parking spaces) and a building. The exact timeframe for project completion is not currently known.

12. Expansions of Greek Housing

There are currently three fraternities in the Campus Periphery Study Area that are in the process of renovation and expansion. While some of the renovation/expansion specifics are still unknown, and some of the projects still require additional funding, it appears that approximately 50-100 new beds will be added to the area. The exact timeframe for completion of the various projects is not currently known.

13. Wesley Foundation

It is anticipated that the Wesley Foundation will demolish their existing building and construct a new expanded building in the near future (Block C-9). The specifics of the development (e.g., land uses and square footages) and the construction timeframe are not currently known.

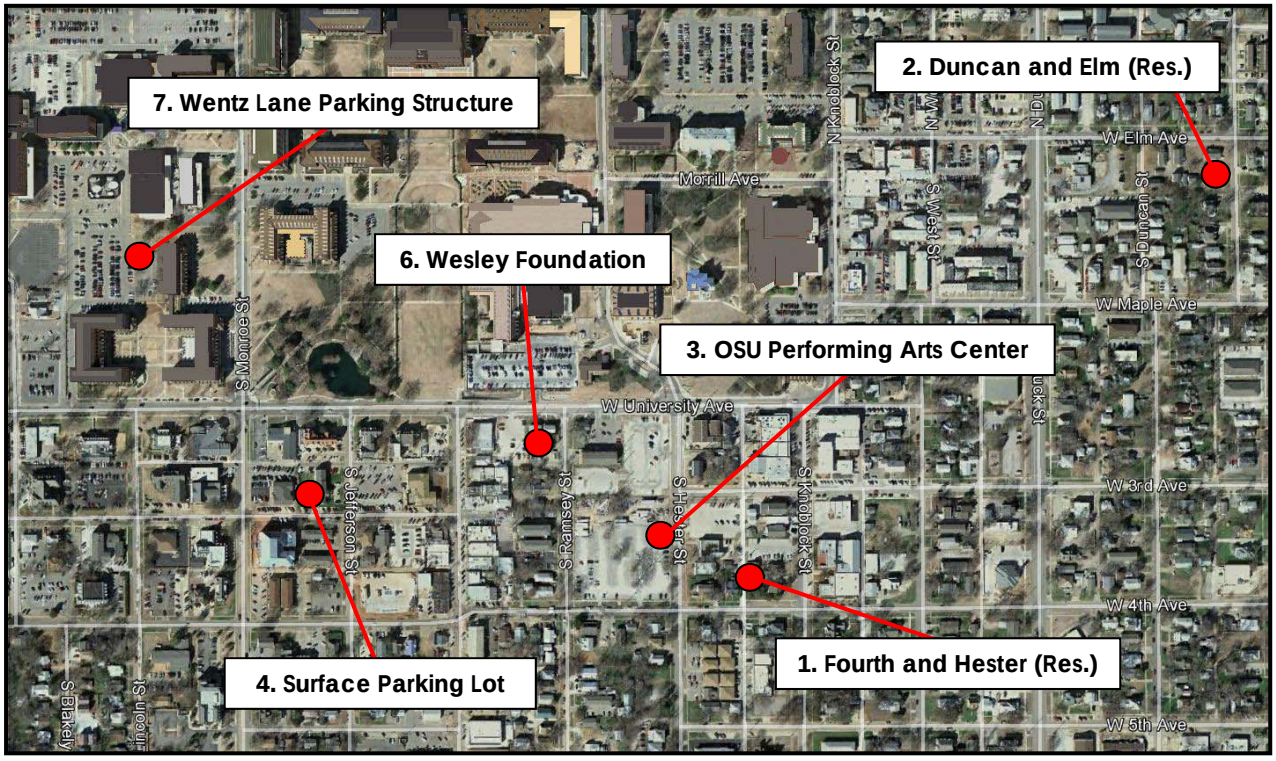
14. New OSU Parking Structure

A new four-level parking structure is currently under construction on Wentz Lane (north of Stout Hall on the OSU campus). The parking structure will include 646 parking spaces. At this time, it is assumed that all of the parking constructed will be used by OSU to cover existing and near-term campus parking demands. However, it is possible that some of the parking in the new structure could be made available to other properties (e.g., fraternities and sororities on the south side of campus). It is anticipated that the parking structure will be completed by the spring of 2013.

All of the currently anticipated future development projects provided by the City of Stillwater are occurring in and around the Campus Periphery Study Area. There are no future development projects currently anticipated in the BID Study Area.

The following graphic (Figure 10) illustrates the approximately location for each of the future development projects listed in this report.

Figure 10: Anticipated Development Projects in the Campus Periphery Study Area



Note: Anticipated fraternity renovations/expansions are not shown due to potential fundraising concerns.

3.02. Estimated Future Population Growth

In addition to future development projects, there are expectations that study area populations will increase over time. The following growth projections were available for inclusion in this report:

- According to student enrollment projections provided on the OSU Department of Administration and Finance's website, campus student populations are projected to increase an average of 2.75% per year over the next five years.
- It is anticipated that the Greek community (general membership), not new residents) may grow up to 10% per year for the foreseeable future.
- Based on population projection information provided by the City of Stillwater, the population of the BID Study Area is projected to increase by as much as 4.87% by 2020 or 80 new people (using the highest increase estimate from the population growth projections). The population of the Campus Periphery Study Area is projected to increase by as much as 11.02 % by 2020 or 360 new people (using the highest increase estimate from the population growth projections).
- According to employment projection information provided by the City of Stillwater, employment in the BID Study Area could increase by 97 to 290 positions by 2020. Employment in the Campus Periphery Study Area could increase by 24 to 100 positions by 2020.
- The overall population of Stillwater is currently anticipated to reach approximately 62,000 by 2030. With a current population of approximately 48,000 residents, an

average annual rate of growth of approximately 1.5% is anticipated. This would result in an increase of approximately 5,300 residents by 2020 (an increase of approximately 11%).

3.03. Projected Future Parking Adequacies

As mentioned in Section 2.02, it appears that there is a significant amount of underutilized parking in each study area. In the BID Study Area sample, there was a surplus of approximately 560 parking spaces (approximately 39% of the effective parking supply was unoccupied). In the Campus Periphery Study Area sample, there was a surplus of approximately 298 parking spaces (approximately 25% of the effective parking supply was unoccupied). The surplus parking supply in the Campus Periphery Study area without the church parking lots was 258 spaces.

Using the information concerning future development projects and the current parking supply/demand information gathered during the field work on September 18-20, 2012, the following future parking adequacies are estimated:

- **BID Study Area:**
  - Current Total Effective Parking Supply: 2,172 spaces (1,058 on-street spaces and 1,114 off-street spaces)
  - Current Estimated Parking Demand (@ 61% Occupied): 1,325 Spaces
  - Current Estimated Parking Surplus: 847 spaces
  - Estimated Future Parking Supply Changes: N/A
  - Estimated Future Parking Demand Increases: Up to 370 new employees and downtown residents by 2020. In addition an increase in demand of 10% due to general population growth (approximately 133 spaces).
  - Estimated Future Parking Surplus: As low as 344 spaces at the observed peak period of parking demand.

- **Campus Periphery Study Area:**
  - Current Effective Parking Supply: 2,572 spaces (739 on-street spaces and 1,833 off-street spaces)
  - Current Estimated Parking Demand (@ 80% Occupied): 2,058 spaces
  - Current Estimated Parking Surplus: 514 spaces
  - Estimated Future Effective Parking Supply Changes: 176 new spaces (one residential garage and net increase of 15 spaces for new surface lot), loss of 455 surface spaces for Performing Arts Center, and gain of 500 spaces for new Performing Arts Center garage – net gain of 221 spaces.
  - Estimated Future Parking Demand Increases: Up to 293 spaces during observed peak period of parking demand due to new residential and new employment by 2020. In addition, an increase in demand of 10% due to general population growth (approximately 206 spaces). Parking demand for new Performing Arts Center (up to 463 spaces during weekday evenings

and 501 spaces during weekend evenings per the Urban Land Institute Shared Parking Model) would likely occur outside of the observed peak.

- o Estimated Future Parking Surplus: As low as 236 spaces at the observed peak period of parking demand. The parking demand impact of the Performing Arts Center, coupled with the parking demands of restaurants and bars in the Campus Periphery Study Area, could shift overall peak parking demands to evening hours.

Overall, it appears that there is a sufficient parking supply in the BID and Campus Periphery Study Areas to support future parking demands – if all available parking supplies can be used to the greatest efficiency possible. If private parking areas are unavailable to support future parking demands, additional public parking supplies could be needed, especially in the Campus Periphery Study Area.

3.04. Alternatives for Addressing Future Parking Needs

While it appears that sufficient parking could be available to meet future parking demands, it is clear that a plan is needed to address future parking needs. Several alternatives are typically available to municipalities relative to meeting anticipated future parking demands:

- The city could decide to improve the utilization of existing parking supplies. This could include working with parking lot owners within impact areas to better utilize private parking supplies. Using the concept of shared parking, existing resources could be maximized to meet anticipated needs.
- The city could create additional parking spaces (either on-street or off-street) to provide additional parking. There is likely sufficient space available to construct either surface parking or parking structures in both study areas. The cost for providing parking could be covered through parking user fees and/or fees charged to developers, property owners, and/or area businesses (e.g., in-lieu fees, special assessments, and development fees).
- The city could require new developments to provide sufficient parking. New developments would provide their own parking for employees and visitors. This could result in higher costs for developers and possibly the overdevelopment of parking supplies. An alternative could be charging in-lieu fees or development fees to require developers to help fund needed public parking resources.
- The city could work to reduce parking needs in the study area through the implementation of various transportation demand management and parking demand management strategies. These strategies would be geared toward reducing parking demands by encouraging the use of alternative modes of transportation and improving parking resource management.
- The city could utilize a combination of alternatives.

In the **First Alternative**, the city would attempt to better utilize available parking supplies. This would mitigate the need to construct additional parking. As there is currently an observed surplus of parking in each study area, this alternative may have merit. Better utilization of the available supply would eliminate at least the need for near-term parking supply additions, maintain existing green space or future development space, encourage pedestrian movement through each area, and reduce city parking responsibilities (e.g., maintenance and signage). Ideally, long-term parkers would be directed to available off-street parking facilities and on-street parking would be held for short-term visitors.

The improved utilization of existing parking areas is substantially less costly than creating new spaces. However, the use of some of the underutilized parking areas will require the approval of the various property owners. In order to encourage the shared use of private parking facilities, the city could use one or more of the following techniques/incentives:

- The city could communicate the positives of shared parking to the private parking lot owners. The positives include increased pedestrian traffic near their businesses, continued economic development, maintaining green spaces and other non-parking land-uses, easier to use parking for customers/visitors, the ability to generate income related to "selling" parking, etc.
- Shared parking could be limited to daytime, evenings, weekends and/or special event days if land uses permit.
- The city could provide periodic lot maintenance for private parking lot owners that agree to allow shared parking.
- The city could provide periodic trash pick-up for private parking lot owners that agree to allow the use of their lots for other visitors.
- The city could provide improved signage for private parking lots. The signage could denote parking restrictions and periods of open public parking.
- The city could help care for parking lot landscaping in private parking lots for owners that permit shared parking.
- The city could assist surplus parking space owners with the purchase and installation of parking access and revenue control equipment to help generate revenue and protect reserved parking areas.

However, this approach to dealing with future parking needs will not necessarily meet all future parking needs. First, the number of parking lot owners willing to cooperate may not be sufficient to provide the necessary parking. Second, the location of available parking supplies may not provide "acceptable" parking for future developments. The available parking supplies may not be within an acceptable walking distance, lot conditions could be poor, etc. Third, some of the underutilized parking areas may be lost to future developments. Finally, the available parking supply may be insufficient to meet all future long-term parking demands. Therefore, additional measures may be necessary to address future needs.

The **Second Alternative** available to the city is to improve the capacities of existing lots or create additional parking spaces to provide sufficient parking to meet future demands.

After reviewing existing conditions, few substantial opportunities for improving parking efficiencies in public parking lots appear available. Possibilities could include (assuming industry-standard parking space dimensions of 18'-0" deep by 9'-0" wide):

- The public parking lot on the northwest corner of 8th Avenue and Lewis Street (Lot B-23-1) could be converted to 90-degree parking with a two-way traffic flow. This adjustment could increase the parking supply from 87 spaces to approximately 113 spaces – a gain of 26 spaces.
- The public parking lot on the southeast corner of 9th Avenue and Lewis Street (Lot B-31-1) could be converted to 90-degree parking with a two-way traffic flow. This adjustment could increase the parking supply from 22 spaces to approximately 27 spaces – a gain of 5 spaces.
- The northern portion of the public parking lot located on the southwest corner of 8th Avenue and Husband Street (Lot B-5-1) could be converted to 90-degree parking with a two-way traffic flow. This adjustment could increase the parking supply in that portion of the lot from 45 spaces to approximately 52 spaces – a gain of 7 spaces.
- Adjusting private surface parking lots in both study areas from angled parking to 90-degree parking could increase parking supplies further. Where parking bays of at least 60'-0" exists (a parking bay consists on one row of parking spaces, a two-way drive aisle, and another row of parking spaces), 90-degree parking could be considered.
- Delineating all on-street parking spaces in both study areas to minimize improper parking.

The combination of the city-owned off-street parking lot adjustments list above would result in a total of 38 new parking spaces in the BID Study Area.

The city currently requires standard 90-degree parking spaces to be at least 20'-0" deep (or 18'-0" deep with a 2'-0" overhang) and 9'-0" wide. In order to improve parking lot efficiencies, ***Carl Walker*** recommends that the city revise current requirements to allow for a standard 90-degree stall size of 18'-0" deep by 9'-0" wide (while maintaining the current drive aisle requirement of 24'-0" for two-way traffic). This stall size is standard in many communities across North America and is recommended by the National Parking Association (*Recommended Zoning Ordinance Provisions – 2006)*. While some vehicles are larger than this stall size, the vast majority of vehicles should fit without negatively impacting drive aisles. More information concerning recommended parking space dimensions in provided in Section 4.02.1 of this report.

If necessary, additional parking supplies could be constructed using available land. Currently, there are several locations within each study area that could support new parking facilities, and some future developments could include structured parking components. Other areas could become available in the future due to new development projects or the demolition of existing structures. The following graphics (Figures 11 and 12) illustrate potential new parking facility locations in each study area.

Figure 11: Possible Locations for Future Parking Facilities – BID Study Area

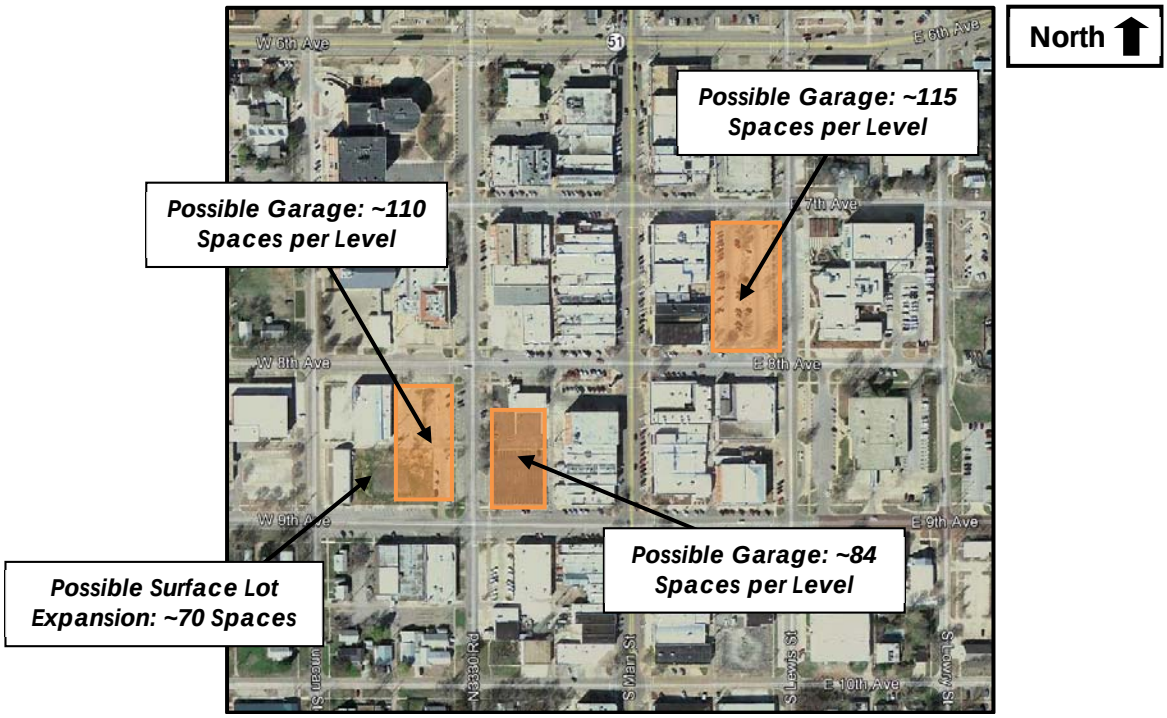
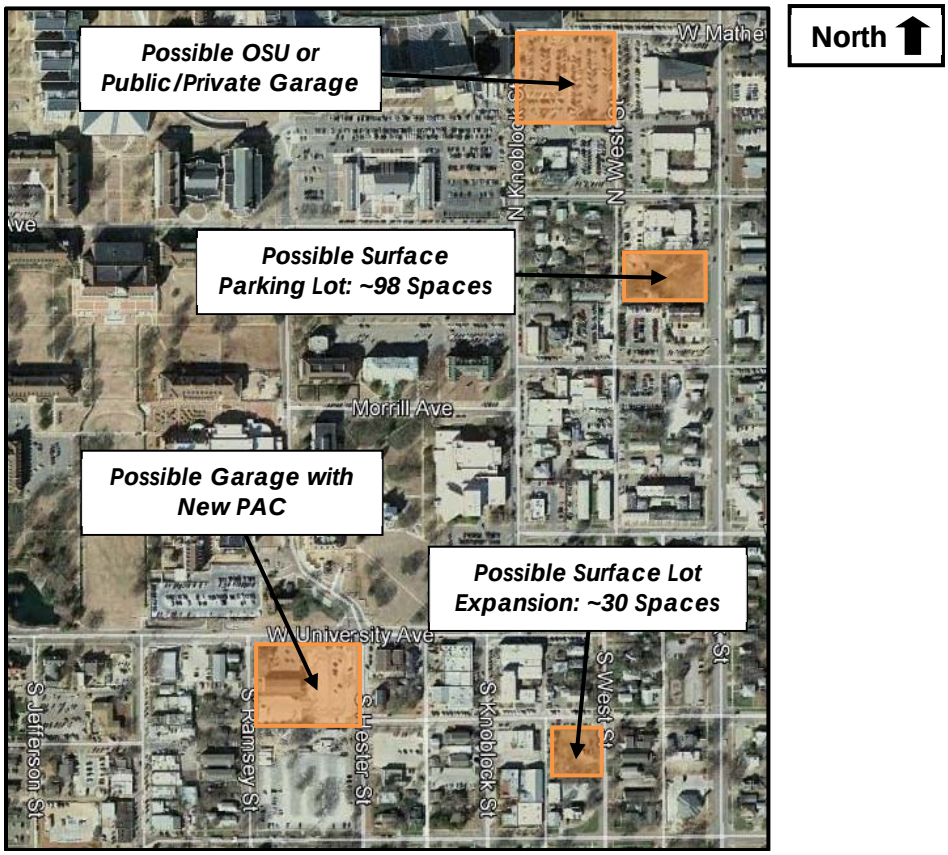


Figure 12: Possible Locations for Future Parking Facilities – Campus Periphery Study Area



Parking structures can provide several advantages over surface parking. First, a parking structure could provide needed parking closer to core areas (or a specific parking demand generator). This would provide area visitors and employees with more reasonable walking distances between the parking supply and their destination. Second, a parking structure could consolidate parking into one location. This could free other nearby surface parking lots for future economic development. Finally, parking structures would provide a stable parking supply. Surface parking will be lost to development over time, whereas it is unlikely that a future development would result in the removal of a parking structure.

However, it is important to note the disadvantages to new parking facility construction. First, the city may have to pay for the construction of the new parking facilities, as well as annual maintenance and operating costs. While the current industry average construction cost per space for structured parking is approximately $15,000, the cost to construct surface parking is much less – approximately 10% to 20% that of structured parking. Annual operating and maintenance costs for a parking structure could be between $250 and $800 per space, per year (depending on operating methodologies and maintenance goals).

Example of Parking Structure Costs

- Assuming 400 parking spaces were constructed, a total construction cost of $6 million would be estimated ($15,000 per space).
- Soft costs (design, engineering, testing, legal fees, financing etc.) would add approximately $2 million, for a total development cost of $8 million.
- Assuming a municipal bond of 4% for 30 years, annual debt service would be approximately $465,000.
- Assuming annual operations and maintenance costs of $400 per space, approximately $160,000 would be needed.
- Total annual operations, maintenance, and debt service would be $625,000.

A second potential challenge is that the future parking demands for some development projects may not be sufficient to warrant new structured parking supplies if other parking resources could be better utilized. This assumes the city works with private parking owners to improve the overall utilization and visitors and employees are willing to walk greater distances. Depending on the development of each area over time (as well as the increased utilization of existing buildings), additional parking supplies may not be needed immediately.

A final challenge to the development of a public parking structure is that the construction of a public parking facility will necessitate generating enough revenue from parking (or related economic development revenues – e.g., fees, increased tax revenues) to financially justify the expense of building the parking. Many businesses,

building owners, developers, employees, and/or visitors may not support the implementation of pay parking.

Ideally, future off-street parking facilities would provide long-term parking to area visitors and employees, leaving the on-street parking spaces for short-term visitors. If multiple locations are designated for structured parking, the facilities could be designated for a single user group or provide parking for both visitors and employees.

The **Third Alternative** available to the city would be to require future developments to provide their own parking resources. The main advantage to this alternative is that the city would not be required to construct, maintain, and operate new public parking supplies. While some towns and cities require developments to provide their own parking supplies, many municipalities that are encouraging development reduce or eliminate parking requirements. Instead, the city works with the development to provide sufficient parking. A variation of this alternative could be requiring developers to pay a fee to fund all or a portion of the construction costs of new public parking resources. This could be a development fee or an in-lieu fee. Also, special assessments could be levied to commercial developments to help fund the construction or operation of parking supplies.

An in-lieu fee would allow developers to pay the city for the right to not construct a portion or all of the parking required for the development. The funds raised through parking in-lieu fees would help fund future public parking facilities constructed by the city. This could be a specific development fee or an in-lieu fee.

The use of in-lieu parking fees can have several advantages:

- Offering parking in-lieu fees provide developers with an option to providing expensive on-site parking. The cost of purchasing the necessary land and funding lot construction is typically more expensive than paying in-lieu fees.
- Parking in-lieu fees encourage shared parking. As developers stop constructing small private parking facilities, parking is consolidated into larger public parking supplies. This results in a more efficient use of available land, the creation of fewer parking spaces, and conditions that encourage pedestrian movement.
- The city would have more control over where parking resources are located and how they are operated and managed. This can help create a parking system that is easier to understand and use.
- As less parking is created, and the parking that is created is consolidated, more space is available for other land uses.
- The city would have greater control over area parking spaces, providing the opportunity for more uniform parking operations and management.

While the use of in-lieu parking fees can provide many benefits to the city, there are also some drawbacks:

- Parking may have to be located less conveniently to primary destinations. As parking is consolidated into fewer locations, some primary destinations will be located further away than if they provided their own parking.
- As the city creates more public parking facilities, the city will have to cover annual operating, maintenance, and management costs.
- As shared parking would be used, fewer parking spaces would be created. This could mean more traffic and frustration during unusually high periods of parking demand, such as during special events.
- The use of these fees could discourage development of certain areas in favor of other locations with space for surface parking.
- Depending on how the construction of the facility is financed, the city could be limited in how the facility is used to provide parking for private developments.

The fees charged to developers are typically determined by the typical construction cost per parking space. Ideally, the construction cost per space would be set at the cost to provide structured parking. However, some communities charge lower fees to discourage developers from building private parking. For example, the city could decide to charge the estimated construction costs of a structure parking space at $15,000 per space (based on anticipated development plans). A development that would typically be required to provide 50 parking spaces would therefore be charged $750,000 in lieu of providing the necessary parking. This fee could be converted into an impact fee of "X" dollars per square foot by dividing the total calculated parking in-lieu fee by the gross square footage of the development. Also, this fee could be charged up-front, or payments could be made to the city over time. This fee would not be required, but would be another option that developers could use to provide parking.

The **Fourth Alternative** involves encouraging the use of alternative modes of transportation and using parking demand management strategies to reduce parking demands. Encouraging the use of alternative modes of transportation could include providing adequate pedestrian and bicycle linkages, providing sufficient mass transit, encouraging the use of carpools/vanpools, guaranteed ride home programs, telecommuting, parking cash-out programs (in future), etc. Some of these options are already available in the study areas. Parking/transportation demand management strategies could include any of the following options (but are not limited to):

- using shared parking concepts;
- instituting and enforcing parking time limit and user group restrictions;
- providing flexibility in determining development parking needs;
- using car sharing programs outside of the campus to reduce or eliminate the need for some off-campus university residents to own vehicles;
- improved parking system information and marketing;
- charging for parking; and,
- improved parking enforcement.

The goal of each of the aforementioned parking demand management strategies is to spread parking demands to appropriate locations, improve the utilization of parking supplies, and/or reduce overall parking demand.

The **Final Alternative** is actually a combination of the previous four alternatives. This alternative would involve the city working with private parking lot owners to better utilize the existing parking supplies before adding additional parking. If sufficient parking cannot be secured using this approach, then the city would consider improving existing parking supplies and/or adding new supplies as appropriate. If new parking spaces were added, either through additional on-street spaces, new or improved parking lots, or parking structures, the city could look to developers to help defray at least a portion of the costs. Finally, the city would encourage the use of alternative modes of transportation, as well as other parking demand management strategies, to reduce overall parking demands. This alternative is recommended as it provides a reasonable approach to dealing with future demands and should limit future parking expenses. Also, this approach will allow the city to show the community that all options were explored prior to expending any city funds for constructing parking facilities. The goal is to provide the "right" amount of parking; not too much and not too little.

3.05. Planning for Future Parking Needs

While no definite development projects are planned outside of those mentioned in the previous sections of this report, additional development projects could materialize in the future that may increase parking demands. Also, reductions in current building vacancies could impact study area parking adequacies. In order to address parking demands related to future development projects, the following methodology is recommended:

- Ensure the land use information for the BID and Campus Periphery are current. This will provide additional insight into existing parking demands. The land use data should be updated as new developments occur.

- The first step in planning for future parking needs is to determine typical parking demands. This is usually achieved by completing a site-specific parking supply and demand survey. This would entail maintaining current parking space inventories and conducting parking occupancy counts (ideally, at least annually – and updating counts as developments occur). This will provide a baseline of demand data from which to project future parking needs. Generally, long-term parking should be provided in off-street parking lots and on-street parking should be managed to ensure availability for short-term visitors.

- Project the parking needs of each proposed development using a shared parking model. Determine how parking demand for the new development will fluctuate

during the day. Then, determine how parking demand for the proposed development will impact parking supplies during the period of greatest parking demand. Use the concept of shared parking to ensure the efficient use of available parking supplies.

- Once parking demands have been projected, determine how the development will impact existing conditions. If the development creates a parking deficit within the block or zone it is located (the zone would typically be a one to two block radius surrounding the development), additional parking supplies may be necessary.

- While the parking demand for many land uses can be spread over greater distances, the creation of residential space should include sufficient, relatively adjacent parking. Residential developments that lack sufficient parking may be less marketable, and conflicts could arise should a significant use of public parking spaces be required to support residential projects. Unbundling residential parking could be an option in the future if additional public parking supplies are constructed and maintained.

- Future developments should include sufficient ADA accessible parking on-site. The city should require developments to provide a suitable portion of their required parking on-site (or directly adjacent to the site) to ensure enough accessible parking is provided. This parking could be provided in a city parking facility adjacent to the development. Sometimes, parking demand for accessible parking may be larger than the minimum requirements. In order to ensure sufficient space is provided, periodic reviews of accessible parking demand should be part of larger parking inventory and occupancy surveys. Through periodic occupancy studies, and community input, the city will be in position to ensure sufficient accessible parking is provided.

- Future parking lots could include landscaping or structures that can provide shade to parked vehicles. This can be accomplished through the use of fast growing, low-water shade trees. These trees can be planted around existing parking lots and in internal landscaped islands. Pedestrian paths to/from parking facilities could also provide shade in a similar fashion. This will help make the off-street parking facilities more attractive to parkers.

- It is important to provide adequate timeframes when planning for future parking needs. It can take between 18 and 24 months to design and construct a parking facility. Therefore, it is important to remain "ahead of the curve" when planning for future parking facilities.

4.0 RECOMMENDED PARKING MANAGEMENT IMPROVEMENTS

4.01. Public Parking Mission, Vision, and Guiding Principles

Guiding principles add value in two primary areas. First, the establishment of a set of approved guidelines helps define the role and relationships of parking within the larger community. Second, guiding principles can emphasize the importance of planning for parking (both supply and management). Some of the items typically incorporated in such a document by other municipalities include mission/vision, funding strategies, approved uses of parking revenues, parking allocation strategies, departmental relationships, enforcement and maintenance responsibilities, etc.

4.01 Mission, Vision, and Guiding Principles

Short-term Recommendations

- Define and approve a set of parking system guiding principles, as well as mission and vision statements for the public parking system.
- Provide opportunities for the community to be involved in the process.
- Communicate these items with community stakeholders.

Long-term Recommendations

- Update the parking system's mission, vision, and guiding principles as needed to support community economic development goals.

Based on information provided by the City of Stillwater, as well as input from community stakeholders, preliminary parking system mission, vision, and guiding principles are outlined below to foster further discussion. These preliminary guiding principles are designed to help support overall community livability and economic development goals while providing an efficient, effective, and responsive parking program.

Mission

Promote the success of private and public activities throughout Stillwater by actively operating and managing public parking resources, guiding the development of private parking facilities, and supporting community goals.

Vision

Parking will actively support the needs, desires, and parking demands of the local community by providing the appropriate mix of parking options and management strategies to maximize the efficiency of available resources.

Guiding Principles

- *The City of Stillwater will endeavor to create a customer-oriented parking management structure that is unified, centralized, and vertically integrated. The parking program will provide all public parking management services within the city including (but not limited to) public on-street and off-street parking, parking planning, enforcement, maintenance, parking system marketing, and other related programs. The city's parking program will be managed in a fair and equitable fashion for the benefit of all community members.*

- *The City of Stillwater will encourage the efficient use of available land by effectively planning for parking needs. Within the framework of the Stillwater*

Master Plan, the city will seek to reduce overall parking needs by encouraging the development of shared parking and public parking facilities, offering alternative methods to address anticipated parking demands, ensuring sufficient access linkages between land uses, and encouraging the use of alternative forms of transportation.

- *The city will encourage the design and development of parking resources that support overall strategic, development, and aesthetic goals/objectives. Parking facilities that adhere to defined community design standards and incorporate the desired design qualities identified by the city will be supported.*

- *The City of Stillwater will ensure all public parking facilities, both on-street and off-street, are safe and well-maintained.*

- *Any revenues generated by the operation and management of the public parking system will be used to fund on-going parking operations and management, as well as the development of new public parking facilities in Stillwater. Available revenues can also be used to fund other approved transportation alternatives and economic development initiatives. Any public parking system profits will be used for the benefit of the geographic area in which they were generated.*

- *The city's parking program will be an active member of the community by assisting in the achievement of overall goals and objectives, as well as communicating goals/objectives, policies, regulations, and systems changes to all public parking customers. The parking program will be responsive in addressing community concerns and meeting parking needs.*

- *The City of Stillwater will endeavor to meet the parking needs of the community with an appropriate balance of parking and transportation alternatives. The city will focus on providing visitors, employees, and residents with sufficient short-term and long-term parking options, while encouraging the utilization of alternative forms of transportation to mitigate overall parking needs.*

- *The city's parking program will endeavor to incorporate cost-effective new technologies into parking management initiatives to ensure the efficient use of available parking and to create a convenient and hospitable experience for visitors, commuters, employees, and residents.*

Establishing a set of guiding principles for public parking is just one opportunity for improving the way parking is perceived. Using this approach as a first step to parking management can build recognition and increase respect and support for parking goals and management. It is strongly recommended that the City of Stillwater work to develop, finalize, and approve a set of parking system guiding parking principles.

4.02. Parking Zoning Code Improvements

As part of this parking study, the project team conducted a limited review of the existing City of Stillwater Parking and Loading Standards (Article VIII of the City of Stillwater Land

Development Code). Existing parking requirement ratios for typical downtown land uses were compared to three industry standards (the National Parking Association, the Urban Land Institute, and the Institute for Transportation Engineers). The results of this review are detailed in the following subsections.

4.02 Parking Zoning Codes

Short-term Recommendations

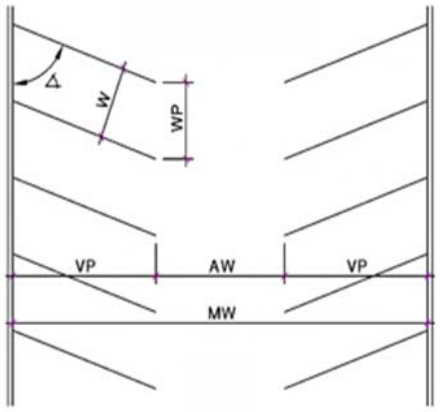
- Update parking-related zoning requirements, including:
  - Parking design standards
  - Change stall size to 9'0" x 18'-0"
  - Accessible parking requirements
  - Parking requirement ratios
  - Alternative requirement methods
  - Parking in-lieu fees in specific districts
  - Motorcycle space standards
  - Limits on private use of public parking

Long-term Recommendations

- Update parking requirements as necessary to reflect existing conditions and the latest parking-related planning strategies.
- Consider creating parking structure design standards to ensure appropriate functional design and architectural design standards are met.

4.02.1 Parking Design Standards

The existing City of Stillwater parking standards provide guidance concerning basic parking design requirements. The current required stall size for 90-degree parking is 9'-0" wide by 20'-0" deep (with no overhang). ***Carl Walker*** recommends updating the existing code to match current industry standards and to include more detail concerning acceptable parking space dimensions. The city should consider incorporating the following dimensions for off-street parking lots in the design standards (W = 9'-0"):



Parking Angle	Stall Width Projection (WP)	Module Width (MW)	Vehicle Projection (VP)	Aisle Width (AW)
45	12'-9"	48'-0"	17'-8"	12'-8"
50	11'-9"	49'-9"	18'-3"	13'-3"
55	11'-0"	51'-0"	18'-8"	13'-8"
60	10'-5"	52'-6"	19'-0"	14'-6"
65	9'-11"	53'-9"	19'-2"	15'-5"
70	9'-7"	55'-0"	19'-3"	16'-6"
75	9'-4"	56'-0"	19'-1"	17'-10"
90	9'-0"	60'-0"	18'-0"	24'-0"

Figure 13. Recommended Parking Space Dimensions

The drive aisles for all parking angles shown in Figure 13, except 90-degree, assume one-way traffic flow. The dimensions for parallel parking should be set to 8'-0" deep (VP) by 22'-0" long (WP).

As mentioned previously, ***Carl Walker*** recommends that the city revise current requirements to allow for a standard 90-degree stall size of 18'-0" deep by 9'-0" wide. While some vehicles are larger than this stall size, the vast majority of vehicles should fit without causing significant problems in drive aisles.

Some communities allow developments to include a set percentage of provided parking spaces as compact parking. While compact parking can increase the number of parking spaces provided in a facility, as well as help encourage the use of smaller vehicles, the spaces are often used to park standard-sized vehicles (especially when the compact spaces are located more conveniently to a destination than the standard spaces). The misuse of compact spaces results in a less efficient use of parking and lowered levels of customer service. ***Carl Walker*** recommends against the inclusion of compact spaces in the city code. Instead, parking requirements should be focused on providing the proper amount of standard sized spaces – not too many and not too few.

In addition to providing further definition to parking space design standards, the city should consider appropriate parking structure design standards for inclusion in zoning codes (e.g., acceptable ramp slopes, height clearances).

4.02.2 Accessible Parking Requirements

The existing parking code does not contain a requirement for accessible parking (although another development code may contain requirements for accessible parking). It is recommended that the City of Stillwater consider updating the parking code to include the latest Americans with Disabilities Act (ADA) guidelines concerning minimum accessible parking requirements. Federal guidelines provide recommendations for the number of spaces to provide, space dimensions, etc. Table 1 illustrates current ADA parking requirement guidelines. One out of every six accessible parking spaces should be designed for van accessible parking. These requirements would apply to both off-street and on-street parking locations (public and private).

Total Number of Parking Spaces Provided in Parking Facility	*Minimum Number of Required Accessible Parking Spaces*
1 to 25	*1*
26 to 50	*2*
51 to 75	*3*
76 to 100	*4*
101 to 150	*5*
151 to 200	*6*
201 to 300	*7*
301 to 400	*8*
401 to 500	*9*
501 to 1,000	*2 percent of total*
1,001 and over	*20, plus 1 for each 100, or fraction thereof, over 1,000*

Table 11. Accessible Parking Space Requirements

Accessible parking requirements for medical facilities are higher than other land uses. Current ADA Accessibility Guidelines require that 10% of the parking spaces serving outpatient facilities and 20% of the spaces for facilities/units specializing in the treatment of mobility impairments be accessible.

Standard accessible parking space dimensions should be 8'-0" wide and 18'-0" deep with a 5'-0" marked access aisle adjacent to the space. Van accessible space dimensions should be 11'-0" wide and 18'-0" deep with a 5'-0" marked access aisle adjacent to the space. Accessible spaces can share access aisles.

Accessible parking spaces that serve a particular building should be located on the shortest accessible route from parking to an ADA-compliant entrance. In facilities that do not serve a particular building, accessible spaces should be located on the shortest accessible route to an accessible pedestrian entrance of the facility. Accessible paths should be marked whenever possible.

4.02.3 Parking Requirement Ratios

The existing off-street parking code provides parking requirements for 84 different land use categories. Table 12 (pages 39 and 40) illustrates how the existing development code requirements compare to three industry standards for typical downtown land uses. The parking requirement ratios used by the City of Stillwater are generally similar to those contained in the three industry standards. Ratio changes recommended would be:

- Consider calculating the parking needed for hotels based on each room, instead of per two beds. A minimum ratio of 1.25 parking spaces per room would be recommended.

- In certain instances, the current parking ratio of 1 space per 400 s.f. of hotel restaurant or public meeting area may be inadequate. A higher requirement matching those for separate restaurant and assembly spaces could be needed.

- The current requirements for restaurants (25 spaces per 1,000 s.f.) are higher than the three industry standards. It is recommended that the city consider adopting requirements similar to those recommended by the National Parking Association.

- Parking space requirements for athletic fields, outdoor athletic facilities, and recreational facilities are lower than some industry standards. It is recommended that the current ratio of approximately .17 spaces per seat be increased to at least .25 spaces per seat.

- In situations where single-family homes are converted to multi-resident units, multi-residential parking requirements should apply (where feasible).

It is important to note that developments located within the central business district of Stillwater are exempt from off-street parking requirements where public parking is available within 600 feet of the development. However, the ratios contained in the city's zoning code should be used as a starting point for estimating parking demands for future downtown developments – with reductions permitted for captive market, shared parking, transit use, transportation demand management strategies, etc. The estimated parking demand would then be compared to parking adequacies in the area surrounding the development (approximately a two block radius). This would allow the city to develop strategies to meet the anticipated parking demands for the development.

Current city parking ratios should be viewed as parking maximums in the downtown study area – developments should not provide more parking unless extenuating circumstances exist.

Table 12. Parking Ratio Comparison by Land Use

City of Stillwater (based on Usable Floor Area, unless otherwise specified)	National Parking Association (2006) (based on Gross and Leasable Floor Area)	Urban Land Institute (2005) (based on Gross and Leasable Floor Area)	Institute of Transportation Engineers (2004) - (85% Percentile) (based on Gross and Leasable Floor Area)
Residential			
Single Family and Two Family: 2 spaces per unit.	Single Family: 1 space per unit (less than 2,000 s.f.), 2 spaces per unit (2,000 to 3,000 s.f.), and 3 spaces per unit (over 3,000 s.f.)	Residential - Owned (Both Weekday and Weekend): 1.7 spaces per unit plus .15 spaces per unit for guests.	Single Family (Detached): 2.14 spaces per unit.
Multi-residential: 1 space per unit for one-bedroom and studio units; 2 spaces per unit for two-bedroom units; 2.33 spaces per unit for three-bedroom units; 3 spaces per unit for four-bedroom units.	Multi-family (Rental): 1 space per efficiency unit; 1.5 spaces for the first bedroom for one or more bedrooms and .25 spaces for each additional bedroom. Multi-family (Owned): 1 space per efficiency unit; 1.75 spaces for the first bedroom for one or more bedrooms and .25 spaces for each additional bedroom. Multi-family (Rental in University District): 1 space per efficiency and one bedroom unit and .50 spaces for each additional bedroom.	Residential - Rented (Both Weekday and Weekend): 1.5 spaces per unit plus .15 spaces per unit for guests.	Multi-family: Low/Mid-Rise Apartment - 1.46 (Suburban) and 1.17 (Urban) spaces per unit; High-Rise Apartment - 1.52 (Central City, Not Downtown) spaces per unit. Townhouse (Rental): 1.78 spaces per unit. Residential Condominium/Townhouse: 1.68 spaces per unit.
Medical Offices			
Medical Office: 1 space per 200 s.f. (or 5 spaces per 1,000 s.f.)	Medical Office (Not Part of Hospital): 4.5 spaces per 1,000 s.f. (GFA). Medical Office (Part of Hospital): 4.0 spaces per 1,000 s.f. (GFA).	Medical Office: 4.5 (weekday and weekend) spaces per 1,000 s.f. (GFA)	Medical-Dental Office: 4.30 spaces per 1,000 s.f. (GFA). Clinic: 4.74 spaces per 1,000 s.f. (GFA)
Banks			
Banks: 1 space per 300 s.f. (or 3.33 spaces per 1,000 s.f.), plus 1 space per teller station. Banks with drive-up service must include queuing capacity.	Consumer Services Office: 4.6 spaces per 1,000 s.f. (GFA)	Bank (Branch with Drive-In): 4.6 spaces per 1,000 s.f. (GFA)	Walk-In Bank: 2.64 spaces per 1,000 s.f. (GFA). Drive-In Bank: 4.14 to 4.62 spaces per 1,000 s.f. (GFA)
Hotels & Motels			
Hotel: 1 space per two beds, plus 1 space per 400 s.f. of public meeting area and restaurant space (or 2.5 spaces per 1,000 s.f.)	Sleeping Rooms: 1 space per unit or room, plus 2 spaces for owners/managers. Commercial Lodgings: 1.25 spaces per room - plus 10 spaces per 1,000 s.f. of restaurant/bar, plus 20 - 30 spaces per 1,000 s.f. for meeting rooms and banquet space. (GFA)	Business Hotel: 1 (weekday) and .90 (weekend) space(s) per guestroom, plus .25 (weekday) and .18 (weekend) spaces per room for employees. Leisure Hotel: .9 (weekday) and 1 (weekend) space(s) per guestroom, plus .25 (weekday) and .18 (weekend) spaces per room for employees. Hotel Restaurant/Lounge: 10 spaces per 1,000 s.f. (GLA). Hotel Conference Center/Banquet (20-50 s.f. per Guest Room): 30 spaces per 1,000 s.f. (GLA). Hotel Convention Space (Over 50 s.f. per Guest Room): 20 (weekday) and 10 (weekend) spaces per 1,000 s.f. (GLA).	Hotel: General - 1.14 spaces per room; Business Hotel - .72 spaces per room. Motel: 1.02 spaces per room. Resort Hotel: 1.86 spaces per room.
Restaurants, Bars, and Night Clubs			
Restaurant: 1 space per 2.5 seats or 40 s.f. of dining and/or drinking area (or 25 spaces per 1,000 s.f.)	Fine Restaurant: 20 spaces per 1,000 s.f. (GFA)	Fine Restaurant: 18 (weekday) and 20 (weekend) spaces per 1,000 s.f. (GLA)	Quality Restaurant: 18.9 (weekday) and 24.1 (Saturday) spaces per 1,000 s.f. (GFA)
Restaurant - Fast Food: 1 space per 3 seats or 40 s.f. of usable floor area (25 spaces per 1,000 s.f.)	Family Restaurant: 15 spaces per 1,000 s.f. (GFA)	Family Restaurant: 10.5 (weekday) and 15 (weekend) spaces per 1,000 s.f. (GLA)	High-Turnover Restaurant: 13.6 to 20.6 spaces per 1,000 s.f. (GFA)
Bar or Tavern: 1 space per 100 s.f. (or 10 spaces per 1,000 s.f.)	Fast Food: 15 spaces per 1,000 s.f. (GFA)	Fast Food: 15 (weekday) and 14 (weekend) spaces per 1,000 s.f. (GLA)	Fast Food: 12.3 to 14.8 spaces per 1,000 s.f. (GFA)
Night Club: 1 space per 50 s.f. of area open to the public (or 20 spaces per 1,000 s.f.	Night Clubs: 19 spaces per 1,000 s.f. (GFA)	Night Clubs: 16.5 (weekday) and 19 spaces (weekend) per 1,000 s.f. (GLA)	No bar or night club ratio available

Table 12 (Continued). Parking Ratio Comparison by Land Use

City of Stillwater (based on Usable Floor Area, unless otherwise specified)	National Parking Association (2006) (based on Gross and Leasable Floor Area)	Urban Land Institute (2005) (based on Gross and Leasable Floor Area)	Institute of Transportation Engineers (2004) - (85% Percentile) (based on Gross and Leasable Floor Area)
Office Buildings			
Professional Office: 1 space per 300 s.f. GFA (or 3.33 spaces per 1,000 s.f.)	General Office less than 25,000 s.f.: 3.8 spaces per 1,000 s.f.; scaled for 25,000 - 100,000, 3.4 spaces per 1,000 s.f.; scaled for 100,000 - 500,000, 2.8 spaces per 1,000 s.f. over 500,000 s.f. (GFA); Data Processing/Telemarketing: 6 spaces per 1,000 s.f. (GFA)	General Office less than 25,000 s.f.: 3.8 (weekday) and .38 (weekend) spaces per 1,000 s.f.; scaled for 25,000 - 100,000 to 3.4 (weekday) and .34 (weekend) spaces per 1,000 s.f.; scaled for 100,000 - 500,000, to 2.8 (weekday) and .28 (weekend) spaces per 1,000 s.f.; over 500,000 s.f. 2.8 (weekday) and .28 (weekend) spaces per 1,000 s.f. (GFA). Data Processing/Telemarketing: 6 (weekday) and .6 (weekend) spaces per 1,000 s.f. (GFA)	General Office: 3.44 (Suburban) and 2.97 (Urban) spaces per 1,000 s.f. (GFA)
Retail Establishments			
Retail requirements range from 500 s.f. per space (2 spaces per 1,000 s.f.) to 250 s.f. per space (4 spaces per 1,000 s.f.), depending on the type of retail. General commercial is 1 space per 300 s.f. (3.33 spaces per 1,000 s.f.)	General Retail: 2.75 spaces per 1,000 s.f. (GFA); Grocery Store: 6.75 spaces per 1,000 s.f. (GFA); Discount Superstores: 5.5 spaces per 1,000 s.f. (GFA); Specialty Superstores: 4.5 spaces per 1,000 s.f. (GFA); Shopping Centers (Not More Than 10% GLA in Non-Retail Sales and Service Uses): 4.0 spaces per 1,000 s.f. for centers up to 400,000 s.f., sliding scale between 400,000 and 600,000 s.f., over 600,000 s.f.: 4.5 spaces per 1,000 s.f. (GLA); Shopping Centers (More Than 10% GLA in Non-Retail Sales and Service Uses): To be established based on a shared parking study prepared specifically for the development.	Community Shopping less than 400,000 s.f.: 3.6 (weekday) and 4 (weekend) spaces per 1,000 s.f. (GLA). Regional Shopping (400,000 to 600,000 s.f.): Sliding scale between 400,000 and 600,000 s.f. ratios. Super-Regional Shopping (over 600,000 s.f.): 4 (weekday) and 4.5 (weekend) spaces per 1,000 s.f. (GLA)	23 different retail categories. General Shopping Center: 2.39 to 5.92 spaces per 1,000 s.f. (GLA). Supermarket: 2.83 to 6.72 spaces per 1,000 s.f. (GFA)
Public Assembly Spaces (Theaters, Meeting Spaces, Etc.)			
Movie Theater: 1 space per 4 seats (.25 spaces per seat). Outdoor Athletic, Recreation Facility: 1 space per 6 seats or 7 board feet of bench area (.17 spaces per seat). Athletic Field: 1 space per 5,000 s.f. of land area. Indoor Athletic, Recreation Facility: 1 space per 3 persons at maximum capacity, plus one per employee(approximately .33 spaces per seat). Community Center: 1 space per 250 s.f. (or 4 spaces per 1,000 s.f.). Auditorium: 1 space per 6 seats or 9 linear feet of fixed benches (.17 spaces per seat), or 1 space per 45 s.f. of floor area without fixed seats (22.2 spaces per 1,000 s.f.).	Theater (live performance): 0.4 space per seat. Cinemas: single screen: 0.5 spaces per seat; 2 to 5 screens: 0.33 spaces per seat; over 10 screens: .27 spaces per seat. Convention Centers, Meeting/Banquet Facilities (Not In a Hotel or In a Hotel, But Exceeding 100 s.f. per sleeping room): up to 25,000 s.f., 30 spaces per 1,000 GFA; scaled between 25,000 and 50,000 s.f.; 50,000 s.f., 20 spaces per 1,000 GFA; scaled between 50,000 and 100,000 s.f.; 100,000 s.f. GFA, 10 per 1,000 s.f., scaled between 100,000 and 250,000 s.f.; 250,000 or more s.f. GFA, 6 spaces per 1,000 s.f. Arenas: .33 spaces per seat. Football Stadiums: .31 spaces per seat. Baseball Stadiums: .35 spaces per seat. All Other Public Assembly: .25 spaces per person in permitted capacity where no seats, or .30 spaces per seat where seated.	Movie Theater: .20 (weekdays) and .27 (weekend) spaces per seat. Performing Arts Theater: .37 (weekday) and .40 (weekend) spaces per seat. Arena: .30 (weekday) and .33 (weekend) spaces per seat. Pro Football Stadium: .31 (weekday and weekend) spaces per seat. Pro Baseball Stadium: .32 (weekday) and .35 (weekend) spaces per seat. Stand Alone Convention Center: 6 spaces per 1,000 s.f. (GLA)	Movie Theater: .36 spaces per seat. Live Theater: .32 spaces per seat.

4.02.4 Parking Requirement Reductions and Shared Parking

The existing code provides for the elimination of parking requirements if a development is located in the central business district and public parking is available within 600 feet. The code does not provide any other parking requirement reductions. However, other possible parking reduction alternatives could be provided through the use of shared parking and/or transportation demand management strategies.

The city code should provide new developments with alternative strategies for meeting parking demands – evidenced through a parking management plan. City approval would be required for all parking requirement reductions. The following code adjustments are recommended:

- Shared parking is defined as parking that can serve more than one single land use, without conflict. Shared parking is generally applied to mixed-use developments, or downtown developments composed of several different land uses (e.g., retail, office, theater) that are significantly integrated. Using the shared parking model usually reduces the amount of parking needed for a mixed-use development (or other groupings of adjacent land uses), as the effect of sharing parking requires fewer spaces than the sum of the parking needed for the individual land uses. It is recommended that this section of the code be updated to utilize the latest Urban Land Institute shared parking model (2005).

- If developments will be allowed to use the parking contained within another property, and owned by another individual or group, it is important that sufficient documentation be provided that guarantees the parking will be available for the anticipated lifespan of the development. This documentation could be provided by way of a written parking agreement or property covenant. Additional provisions could be included in the agreement requiring the developer to either construct the necessary parking or pay an in-lieu fee to the city should the off-site/shared parking become unavailable.

- Parking reductions could be provided through the use of transportation demand management strategies, such as buildings including bicycle racks, shower facilities, shared cars, subsidized bus passes, proximity to transit, etc.

- The city should consider the inclusion of alternate methods for calculating anticipated parking demands. This would allow developers and property owners to more accurately determine parking demand using either a shared parking model or a detailed parking supply and demand study completed by a professional parking planner or traffic engineer.

- The development code should provide a parking credit for underutilized on-street parking located adjacent to a development. This will help reduce the possibility of providing too much off-street parking.

4.02.5 Parking In-Lieu Fees

The current city code does not include a provision for parking in-lieu fees for any developments. An in-lieu fee would allow developers to pay the city for the right to not construct a portion or all of the parking required by the development. The funds raised through parking in-lieu fees would help fund future municipal public parking facilities. This could be a specific development fee or an in-lieu fee. This strategy should only be allowed in designated parking districts with active

management of public parking. In-lieu fees are used in smaller communities like La Quinta, CA and large cities such as Portland, OR.

This fee should only be applied to areas where public parking could be provided in the future. This would include the BID and Campus Periphery areas included in this report.

4.02.6 Motorcycle Parking

Few city parking codes require set amounts of motorcycle parking, although some do allow small amounts of motorcycle parking to be counted toward a development's parking requirement. However, motorcycle parking is often included in public parking areas. Usually, motorcycle spaces are located in areas with observed motorcycle parking demands or in small amounts in public parking facilities (adjusted as needed to meet demand).

When providing motorcycle parking, the following typical recommendations should be followed:

- Motorcycle parking spaces should be a minimum of 4'-6" wide and 9'-0" deep.

- Ideally, motorcycle parking should be located based on demand. In some communities, the amount of motorcycle parking is provided as a percentage of standard parking. For example, based on vehicle registrations in Oklahoma in 2007, approximately 1 motorcycle parking spaces could be needed for every 45 standard parking spaces. In any case, start with providing a small number of spaces and then observe utilization to determine future adjustments.

- Motorcycle parking should be provided on concrete, not asphalt. During summer months, motorcycle kickstands can push into asphalt surfaces – damaging the surface and potentially resulting in a motorcycle falling over.

- On-street motorcycle parking should be located at the end of a block, ideally at an end that can serve multiple blocks. This location can also improve viewing distances at corners as larger vehicles will be located further from the intersection.

- In off-street parking lots, motorcycle parking should be located in the corners of the lot where automobile parking cannot be provided. If parking control gates are used, the motorcycle parking should be accessible without having to go through the gates.

- In parking structures, motorcycle parking should be located on the ground level in one clearly designated area (ideally, a corner where automobile parking cannot be provided). If control gates are used, the motorcycle parking should be accessible without having to go through the gates.

4.02.6 Allowance for Private Use of Public Parking

As mentioned previously, the existing zoning code allows public parking spaces located within 600 feet of a development to be counted toward code parking requirements. However, the day-to-day availability of those spaces is not taken into consideration. This could lead to situations where allowances for public parking are provided but unused parking spaces are not available.

In order to mitigate the chances of this situation occurring, the following improvements are recommended:

- Update the existing zoning code to limit the use of public parking spaces to those that are available, such as changing Section 23-220, item "b" to say: "*Businesses in the CB district are exempt from the off-street parking where available, underutilized public parking spaces are located within 600 feet.*"

- Prior to providing an exemption from the zoning code parking requirements, require the developer/owner to conduct a parking utilization survey of public parking spaces within 600 feet of their development/building to support their case for an exemption. This survey could also be completed by the city if necessary or desired. The survey should include occupancy surveys during the anticipated peak parking demand of the land use.

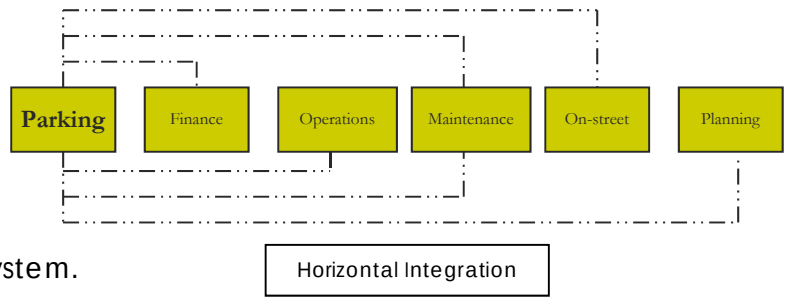
- The availability of parking should be based on the effective supply of parking. So, on-street spaces should be used to 85% of the available supply and off-street spaces should be used to 90% of the supply. If observed parking demands already exceed these levels, a parking exemption should not be provided.

4.03 Parking Organization and Management

City involvement in parking management is currently limited to designating on-street parking locations, cleaning and maintenance of existing public parking facilities, enforcement of parking-related zoning codes, city-wide parking enforcement, and limited signage upkeep. There is currently no single city department responsible for overall parking management.

Many parking programs, especially in municipal environments, evolved over time into organizational structures that are "horizontally integrated". This means that various parking system components are spread among multiple departments or entities.

In a horizontally integrated parking program, where each department only manages one aspect of the parking system (such as on-street parking, enforcement, or parking structures), no one has responsibility, or the perspective, to manage all these interrelated components as a system.



Several very effective parking system organizational models are used across the country. Each of these models has its own strengths and weaknesses depending on several factors including the parking system's size, degree of development, programs offered, political landscape, community goals, etc. Four successful and commonly utilized parking organizational models are:

- A Consolidated ("vertically-integrated") City/District Department model;
- The Parking Authority model;
- The "Contract" or Business District model;
- The Parking District model.

There are of course several variations and hybrids of these models, but these are the four primary alternatives commonly seen across the country. Each of these models will be detailed in more depth in the following sub-sections, but they all have one common factor that contributes to their success: They all address the major problem associated with the "horizontally-integrated model" previously described.

When evaluating which organizational option will work best in a specific community, it is important to ask community stakeholders to create a prioritized set of evaluation criteria. A typical list of criteria would include determining which organizational option:

- best supports economic development;
- best reflects the image and personality of the community;
- is most efficient/cost effective;
- is most customer-friendly;
- is most politically feasible;
- is most focused on the vision;
- is easiest to achieve;

4.03 Parking Organization and Management

Short-term Recommendations

- Designate an existing city department as responsible for the public parking system.
- Consider creating a volunteer Parking Committee to advise the city about parking concerns and discuss potential solutions.
- Define the boundaries of the Parking Management District(s).
- Begin discussions concerning how the public parking system will be managed and operated in the future. Involve community stakeholders in the decision-making process.
- Work toward creating a vertically-integrated parking system, with one department or organization responsible for parking management and operations (on-street and off-street), planning, maintenance, enforcement, etc.
- Begin discussions concerning how the public parking system will be funded.

Long-term Recommendations

- Determine how the parking system will be managed long-term. Consider the implementation of a community-based management approach, such as a parking district, parking authority, or downtown business organization.
- Work to create and diversify parking-related revenue streams to ensure sufficient funds exist to cover parking-related management, operations, marketing, maintenance, and future construction expenses.
- As future developments occur, determine appropriate financing strategies for public parking facilities.

- is most responsive to businesses and stakeholders;
- is most financially viable; and,
- provides the most effective coordination.

The following is a brief description of parking system organizational models that have shown demonstrated success in recent years.

Consolidated ("Vertically Integrated") City/District Department Model

A Consolidated "Vertically Integrated" City/District Department Model is essentially a typical department – lead by a department head and a varying assortment of support staff. The defining characteristic of this model is that the department director has complete responsibility for the management of all parking related program elements. The primary elements of these being:

- off-street parking facilities;
- on-street parking resources;
- parking system planning; and,
- parking enforcement.

Significant Pros and Cons of Consolidated City/District Department Model

Pros

- Uses existing city organizational structure and resources.
- Many parking functions are already operated within the city.
- Easier to start vertical-integration.

Cons

- Can sometimes be less responsive to community concerns/needs.
- Funding/budget tied to larger community.
- Community involvement in decision making less direct.

There are numerous other related areas that can become involved including (but not limited to):

- Transportation demand management (trip reduction programs, preferential parking for carpools/vanpools, transit programs, etc.)
- Parking system branding, marketing, and community outreach.
- Implementation of new technologies.
- Parking system planning (e.g., zoning, financial planning).
- Residential permit parking programs.
- Interface with area redevelopment and economic development.

The Parking Authority Model

Parking authorities typically operate with a small staff and engage a private parking operator to manage day-to-day operations. One advantage of the Parking Authority model, especially in a

Significant Pros and Cons of the Parking Authority Model

Pros

- Parking organization and funding is more independent (not part of city government).
- Focus of organization is solely on parking operations and management.
- Can be more community focused and driven.

Cons

- Can be difficult to start.
- Small size of operation can be operationally and financially challenging.

municipal setting, is that it puts all the major parties at the same table. This helps stakeholders gain a deeper appreciation for the competing agendas between constituents.

The defining characteristics of a Parking Authority Model can include:

- It has a defined mission and vision.
- It is governed by a detailed management agreement.
- Has bonding capability (either independently or through municipality).
- Most often has responsibility for all aspects of parking operations (off-street, on-street, and enforcement).
- It is typically headed by a President or Executive Director.
  - Because of this, they tend to attract the highest caliber parking management personnel.
- The President or Executive Director reports to a board (Typically 7 – 15 members).
- The board is comprised of influential and invested stakeholders.
  - Board composition typically includes:
    - High level city staff:
      - Mayor or City Manager (or appointee).
      - Director of Finance.
      - Director of Public Works.
    - Property and business owners.
    - Downtown association members.
    - Chamber of Commerce representative.
    - Large downtown employers.

The "Contract" or Business District Model

In a surprising number of communities across the United States, downtown business improvement districts or downtown associations are successfully taking operational responsibility for parking. Similar to the Parking Authority Model, the Contract or Business District Model is governed by a well-defined operating agreement that sets specific expectations and limits on the use of parking assets. These contracts or agreements must typically be reauthorized every 3 – 5 years based on whether the defined contract

Significant Pros and Cons of the Business District Model

Pros

- Day-to-day operations and management provided by community stakeholder group.
- Focus of organization is on both parking management and economic development.
- More community focused and driven.

Cons

- Can be difficult to start with little or no parking expertise.
- Small size of operation can be operationally and financially challenging.
- May be too focused on certain user groups.

goals were met. If reauthorized, it is not uncommon for new goals and program objectives to be set for the next contract period.

The Parking District Model

The Parking District Model is slightly different than the previously defined model, but as mentioned earlier, the one common element of all of these successful models is the goal of creating a "comprehensive parking management function" under the control of one leader ("vertical integration").

Significant Pros and Cons of the Parking District Model

Pros

- Day-to-day operations and management could be provided by city or outside group.
- Generally organized around generating revenue for parking operations.

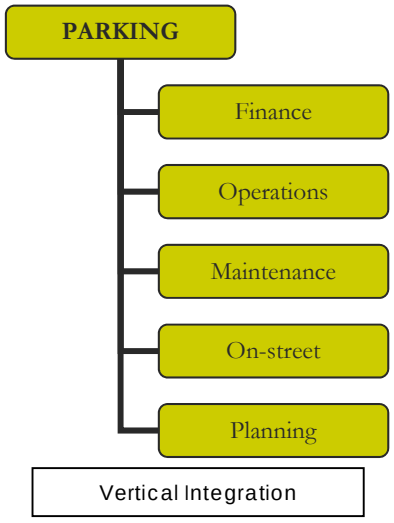
Cons

- Can be difficult to start with little or no parking expertise.
- Small size of operation can be operationally and financially challenging.

The characteristics of a parking district include:

- They typically have a defined area with set boundaries.
- They may have a special assessment that applies to all properties within the district.
    - This revenue generally goes toward defined district improvements, but could be restricted to parking or transportation related projects.
- They are generally run by an Executive Director or President (although some are run by city department heads).
- All revenues are collected and managed by the district for reinvestment in the district.
    - In some cases, if revenues exceed operational or capital program needs, the additional funds are returned to the city's general fund.
    - In other cases, the city assesses the district a fee based on a percentage of net revenues in-lieu of not assessing property taxes on the parking facilities. This money goes to the city's general fund.
- Revenue sources typically include:
    - Special assessment revenue (if applicable).
    - Off-street parking revenue.
        - Could include miscellaneous revenue sources such as: advertising (in parking structures), vending machines or retail space rental (mixed-use parking facilities).
        - Could also include special event parking revenue.
    - On-street parking revenue.
    - Parking enforcement revenue.

It is recommended that the City of Stillwater work to create a vertically-integrated public parking system. The process of organizing the management of the parking system will take time and should be set up to maximize the benefits of a coordinated parking system into the future, not just appeasing the needs of today. All public parking assets should be incorporated into the parking system including off-street parking lots, on-street spaces, enforcement, and fine collection. All parking-related revenues should flow toward the goals of the system, in concert with the designated guiding principles. If the system is financially stable and achieving its goals, then revenue could be diverted to other associated needs. The parking system can also serve the following functions:



- A clearinghouse for public parking information.
- Provide support for private parking owners/operators.
- Participate in the planning and development process.
- Develop policies and procedures based on approved guiding principles.
- Develop parking system mission and vision statements to reflect alignment with community development programs and strategic goals.

It is recommended that a department within the city be designated on an interim basis as responsible for coordinating public parking planning, management, and operational efforts. This would provide a single point of contact for parking related issues, and help begin to widen the city's perspective of overall parking issues/challenges. This department would be responsible for parking planning and management until a preferred management structure has been selected.

To assist the city with defining parking management strategies and refining ongoing operations, it is also recommended to create a volunteer Parking Committee. The committee would not have any specific powers, but would instead advise the city concerning parking-related matters. The committee would be composed of 7 to 13 members of the community including representation from the City of Stillwater (e.g., council members, city traffic department, community development) and other stakeholders from the areas under direct parking management (e.g., representatives from OSU, private parking lot owners, business owners, property owners, residents). The committee can be an effective means of making sure that the needs of all community stakeholders impacted by parking management are represented and that the policy direction detailed in the guiding principles are being translated into practical procedures and operational improvements.

Prior to organizing a new management structure for parking, the city will need to delineate where the management organization will focus their efforts. The borders for this area could initially match the parking study areas (the BID and the Campus Periphery). While issues such as parking enforcement and residential permit programs could apply

city wide, the parking management organization will initially focus on parking issues within the designated parking management area.

In addition to defining district boundaries and selecting a preferred management structure, the city will need to determine what revenue streams will be available to fund on-going parking operations, management, new facilities, and any transportation demand management initiatives. The system could be provided with one or more of the following revenue streams (but not limited to):

- Pay Parking Revenues: Potential parking revenues would include monthly parking in public parking lots, as well as transient parking in off-street and on-street areas.

- Parking Enforcement Revenue: If parking enforcement responsibilities are incorporated into a larger public parking system, revenues generated from parking fines should be used to fund parking needs.

- Advertising Revenue: The parking system may be able to generate additional revenue through advertising local businesses and/or events in parking facilities.

- Parking In-Lieu Fees: The amount generated using this option will ultimately depend on how often the alternative is used. However, the fee should be set to cover at least the projected construction cost of parking spaces in new parking lots (or structures in the future).

- Special Assessments: Within the designated parking management area, the city (or designated management organization) could consider implementing special assessments to generate additional funds to pay for parking operations, management, and future construction.

- Transfers from Other City Sources: The city may designate other funds to support the public parking system (e.g., other taxes or assessments).

- Tax Increment Financing (TIF): The city could explore opportunities to fund new public parking construction using tax increment financing.

Financing the construction of future parking facilities could be accomplished in a number of ways. Common options for financing public parking facilities include:

- Bonds: The city could issue bonds backed by tax revenues or special assessments to finance parking facility construction. The bonds could be either tax-exempt or taxable. Tax-exempt bonds would cost less to repay (due to lower interest rates), but would limit how much of the parking could be reserved for specific land uses. Taxable bonds would be more expensive, but the city would have more flexibility in how the new parking is managed.

  Revenue bonds may not be an option as the existing parking system does not generate any revenue to cover bond debt. However, in the future, sufficient parking-related revenues could be generated to cover bond debts. Also, the city

could pledge more than one revenue stream to repay revenue bonds (double-barreled bonds).

- In-Lieu Fees: As previously mentioned, in-lieu fees could be collected from downtown developments and reserved for the construction of new facilities.

- Federal/State Programs: If a new parking facility incorporates an alternative transportation component (e.g., bus transfer center), or is constructed to support an economic development initiative, federal or state funds may be available to support construction.

- Public/Private Partnership: The formation of a public/private partnership in the construction of a parking facility could allow the city to construct a structure while minimizing funds needed. This option could work in a number of ways. First, the city and a private developer could split the cost of the parking facility. This would allow the municipality to construct needed spaces while saving on design, equipment, and other consulting/environmental costs. Second, the city could offer land it owns for the construction of a private parking structure that would in turn provide some amount of public parking. In this instance, the city would have the parking spaces it needs without having to construct them. Finally, the city could incentivize private parking construction by providing a development with tax abatements or other development incentives. The developer would then be required to provide their own parking, with the municipality in effect subsidizing its construction.

4.04 Parking System Communications and Marketing

While the current public parking system is not overly complex, a breakdown in communications can foster a perception of parking problems. Parking communications and marketing refer to two key issues. First, communicating parking policies, regulations

4.04 Parking System Communications and Marketing

Short-term Recommendations

- Work with the community to determine appropriate methods to communicate parking system issues and goals.
- Develop a BID and Campus Corner parking map. Distribute printed copies to area businesses and post versions on the city's website. Links to the parking maps could also be placed on downtown business organization and individual business websites.
- Begin the process of branding the public parking system, developing a logo, signage, and other marketing materials.
- Develop a "new downtown employee" packet that would include information on appropriate parking locations and alternative forms of transportation.
- Communicate community parking policies to OSU students during new student orientation programs, as well as through other means such as the university website, campus parking materials, etc.

Long-term Recommendations

- Develop methods to encourage public participation in the parking system, such as periodic public/stakeholder input meetings, online surveys or comment forms, mail-in comment cards, etc.
- Continue working to brand the parking system.
- Create a parking system annual report to communicate system progress, challenges, and parking supply/demand changes.
- Incorporate parking system branding initiatives into new parking facilities as they are developed.

and services to parking customers. Second, communicating parking system issues, challenges and improvements to community stakeholders.

Communicating parking policies and regulations to parkers is typically done through the use of parking maps and the city (or future parking organization) website. One-page parking maps could be created to show the locations of public parking supplies, provide area parking policies and regulations, provide contact information for questions and provide other local area information (see Figure 14 for an example). These maps would be available at city offices and at area businesses. The map would also be available for download from the city website. Other area marketing materials, either developed by the city or other organizations, should include parking information for visitors.

In addition to communicating parking system issues to the community, the parking system needs an easily identifiable "brand". The city (or parking organization) will need to develop a branding strategy and incorporate these concepts into public parking marketing efforts. The following is a list of potential action items that can help launch a new parking program:

- The brand should promote the image you want people to have of the system (e.g., easy, convenient, and inexpensive).
- While an easily identifiable logo is important, a brand is more than a logo or tag-line. The brand should reinforce the positive aspects of the system (see above).
- Use consistent signage in parking areas to tie the system together.
- Have a parking tie-in to most promotional materials.
- Develop new employee/tenant parking brochures or information packets.
- Develop parking "E-Bulletins" to be distributed to community members.
- Develop strategies for regular contact with customers.
- Look for practical opportunities to connect the parking program to community initiatives, for example: develop parking deck floor identification (themed graphics, music, etc.) as an extension of a local public arts program.

Figure 14. Sample Parking Map

Improving communications with community stakeholders should be accomplished through periodic parking-specific input meetings (perhaps once per year), annual

parking system reports distributed online, and parking staff involvement in appropriate area organizations. All of these options provide opportunities for the parking system to provide information concerning public parking conditions to stakeholders, in addition to gaining valuable public input.

4.05 Parking Signage and Wayfinding

Currently, parking signage is limited to no parking signage, time limit signage, and private parking/tow away signage. In order to better direct visitors to available parking, the city should provide adequate wayfinding signage to locate public parking facilities as well as parking facility regulations. Ideally, parking signage should be part of a larger community wayfinding system. Directional signage should be provided to help visitors locate parking resources, depending on the type of parking they need. Then, signs should be located in each parking lot that provides a name for the lot, who can park there, as well as any specific restrictions. For example, signage should be located on Main Street to direct visitors to appropriate public parking lots and on-street supplies. Then, signage in each public parking lot (either publicly-owned lots or privately-owned lots that provide public parking) would identify the parking lot, as well as any necessary regulations (e.g., hours of operation, time limits, and periods of unrestricted parking). Parking signage should be simple to read, and match the basic design of other wayfinding signage installed by the city.

4.05 Parking System Signage and Wayfinding

Short-term Recommendations

- Directional signage should be placed on Main Street in the BID to direct visitors to public parking lots on Lewis Street and Husband Street.
- Signage should be posted at the entrance to public parking lots to communicate intended user groups, restrictions, and denote operating hours.
- Ensure off-street parking signage in both city lots and privately-owned facilities does not discourage use by authorized long-term visitors (e.g., signs should note intended user groups, not just reserved parking or tow warnings).
- Coordinate signage with other city and/or OSU signage to create a unified wayfinding system.
- Consider installing additional directional signage on streets to help visitors find appropriate parking locations, including privately-owned parking lots that also provide public parking.

Long-term Recommendations

- Maintain and update signs as necessary.
- Incorporate any future parking system logos on directional and informational signs.

Some of the no-parking signage currently in private parking lots can discourage visitor use, as they are fairly threatening and not clear as to who is authorized to park. While reserved parking signs are common, they should clearly denote which business the parking serves. Ideally, parking located behind businesses should first be used by employees in order to keep the spaces reserved and open more on-street or other public parking for visitors.

Signage for public parking identification and wayfinding should be designed and located by an experienced wayfinding consultant.

Figure 15. Parking Signage Examples

4.06 Parking Security and Lighting

A common concern in many communities is the need to improve security and lighting in parking lots and on pedestrian paths to/from parking areas. Improving these issues can make parking located further from primary destinations more attractive.

There are basically two types of parking facility security options: passive security and active security. Passive security refers to designing a facility to create a secure environment, without the need for an active human security response. This typically includes eliminating potential hiding places, appropriate lighting levels, low-level landscaping around the parking facility perimeter, etc. These elements promote a secure environment.

Active security refers to the addition of systems that require a human response, such as panic alarms, closed-circuit television, etc. While passive security creates an environment that deters criminal activity, sometimes additional steps are necessary to further discourage crime or to improve perceived facility security.

4.06 Parking Security and Lighting

Short-term Recommendations

- Ensure existing parking facilities are safe and well-lighted. Consider conducting a security review with local law enforcement and lighting studies in each public parking area.
- Ensure pedestrian paths between parking facilities and area destinations are well-lighted and safe.
- Consider using "parking ambassadors" to provide parking enforcement, as well as basic area security.
- Update parking-related zoning requirements to include appropriate lighting standards.

Long-term Recommendations

- Consider installing panic alarms or emergency call boxes in public parking lots and future parking lots/structures.
- Ensure all future parking facilities incorporate CPTED standards.
- Incorporate parking industry best practices related to facility safety and security into future parking structure design standards.

Clearly, all public facilities should embody the concepts of Crime Prevention through Environmental Design (or CPTED) and parking is no exception. According to the National Crime Prevention Institute, CPTED is "... the proper design and effective use of the built environment which may lead to a reduction in the fear and incidence of crime, and an improvement of the quality of life." Parking facilities should be properly landscaped, lines of sight should be unobstructed, potential hiding places should be eliminated, and adequate lighting should be provided. Local law enforcement should be able to provide a CPTED review of city parking facilities and provide additional security design recommendations.

Several active security methods could be included in public parking facilities to improve real and perceived security. First, panic alarms could be installed in parking areas. These alarms would generate a loud noise when activated, and could also incorporate a pulsating light to indicate where help is needed. Several types of alarm systems are available including wireless systems with intercom features. The intercoms could provide a voice connection directly to the police department in the event of an emergency. Ideally, the alarms should be placed within a 100-foot walking distance from anywhere in the parking area. Other active security measures, such as closed-circuit television, would not be recommended at this time due to costs and/or the lack of personnel to continually monitor the system (liability concern).

Parking facility lighting should be sufficient to help avoid vehicle accidents, provide visibility of pedestrian hazards, deter criminal activity and meet parking industry lighting standards. A minimum horizontal illuminance of 0.5 foot-candles (measured on the parking surface, without any shadowing effect from parking vehicles, trees, etc.) is recommended for enhanced security in parking lots by the Illuminating Engineering Society of North America (IESNA RP-20-98). The recommended minimum vertical illuminance (measured at 5.0' above the parking surface) is also 0.5 foot-candles. In order to reduce the amount of light scatter, fixtures that direct light downward onto the parking lot (cutoff luminaire) are recommended. For parking structures, a minimum illuminance of 1 to 2 foot-candles as measured on the parking surface is recommended. In order to determine if lighting is sufficient in parking areas and pedestrian pathways, it is recommended that the city conduct parking-facility specific and larger community lighting studies in the future.

4.07 Parking Operations and Allocations

Based on the sample parking occupancy surveys completed in September 2012, it appears that there is sufficient parking in both the BID and Campus Periphery to meet existing demands if the parking is used to its greatest efficiency (except in Sub-Area D, which appears to be effectively full). There were surpluses of approximately 560 spaces and 298 spaces in the BID and Campus Periphery respectively.

In order to improve the efficiency of available parking, and to improve identified parking challenges in the community, the following operational and allocation adjustments are recommended.

4.07.1 BID Study Area Issues and Concerns

The following parking improvements are recommended to address parking-related issues and concerns in the BID Study Area:

- **Allocating Parking for City Employees**

  According to information provided by the City of Stillwater, there are currently 223 city employees that work in the BID Study Area (not including the courthouse). Approximately 170 of these employees are at work during the peak period of observed parking in the BID (2:00 p.m. on weekdays). Assuming approximately 97% of city employees drive to work each day, there would be 164 city-employee vehicles parked in the BID.

  There are currently 58 spaces located in the city parking lot on the east side of City Hall. Assuming an effective supply of 90%, 52 spaces are available in this lot. Therefore, approximately 112 parking spaces are needed to fully satisfy city employee parking needs.

  Typically, the most convenient parking spaces are provided for visitor/customer parking. So, high-demand on-street parking spaces (spaces with utilizations over 70%) and spaces located in lots near commercial areas (e.g., Lot B23–1) should be managed to discourage long-term employee parking. Possible parking locations for city employees

4.07 Parking Operations and Allocations

Short-term Recommendations

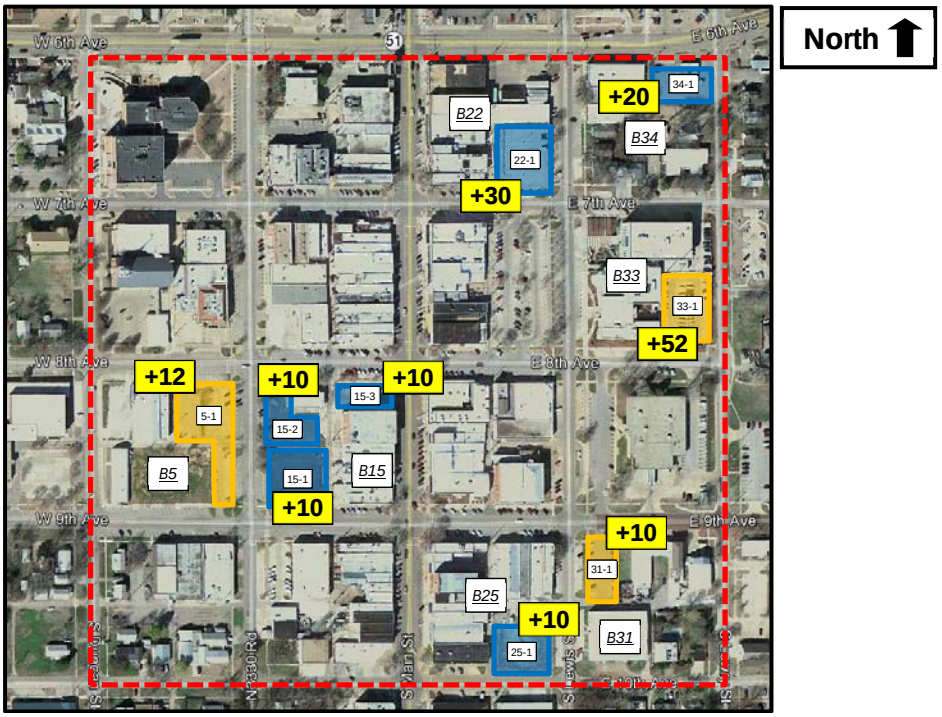
- Improve the allocation of city and BID employee parking to reduce long-term parking in short-term spaces.
- Increase shared parking in Greek Neighborhood.
- Consider off-site storage for Greek resident vehicles.
- Add on-street parking and off-street lots where practical, but discourage parking lots in neighborhoods.
- Better coordinate parking for Greek events and social gatherings.
- Designate appropriate on-street design standards.
- In neighborhoods, use existing codes and parking ordinances before implementing residential parking permit districts.
- Involve neighborhood residents in future parking management adjustments.
- Maximize the utilization of available on-street and off-street parking spaces.
- Adjust the time limits of on-street parking to encourage more parking in underutilized areas.
- Update parking ordinances to discourage people from moving vehicles to avoid time limits.
- Adjust enforcement hours to address overlapping parking demands.
- Reconsider providing reserved parking in public lots and relocate city vehicle parking.
- Encourage the use of alternative forms of transportation.
- Begin managing event parking demands.

Long-term Recommendations

- Refine preferred management strategies for special event parking.
- Implement pay parking when parking demands warrant.
- In the future, review and adjust parking management strategies to ensure parking and transportation goals are met.

with space availabilities are shown in the following figure (Figure 16). The potential space availability for each location is based on observed parking occupancies.

Figure 16. Possible City Employee Parking Areas



City-owned lots are highlighted in orange and privately-owned lots are highlighted in blue.

The locations identified in Figure 16 could provide approximately 164 parking spaces for city employees. While this would improve the utilization of available parking spaces and reduce the need to dedicate more land to surface parking, this approach would result in employee parking being scattered throughout the BID. This could be difficult to manage and monitor. Also, it may be difficult and/or costly to secure city employee parking in privately-owned parking lots.

Another alternative could be to construct additional surface parking spaces. While the location is less than optimal, sufficient land is available on Block B5. As stated in Section 3.04, the existing city lot on the northeast corner of Husband St. and 8th Avenue could be reconfigured and expanded to provide approximately 77 new parking spaces. This addition, coupled with the existing city employee lot (Lot B33-1) and the 30 underutilized spaces in the nearby parking structure (B22-1) could provide 159 employee parking spaces.

It is recommended that the city first attempt to improve the utilization of existing parking supplies before constructing new parking spaces. This will reduce the amount of land dedicated to parking and provide

space for future development projects. There are approximately 77 city-owned spaces located outside of the BID Study Area on Lowry Street, between 7th Avenue and 10th Avenue (not shown). These spaces, in addition to B33-1 (52 spaces), the surplus capacity in B22-1 (30 spaces), and the existing surpluses in B31-1 (10 spaces) and B5-1 (12 spaces) should be sufficient to meet existing city employee demands (181 spaces total).

As parking is available in other locations, reconsider providing individually reserved parking spaces in public parking lots (specifically, reserved spaces for employees and/or city vehicles in Lot B23-1). Individual reserved parking spaces, while highly advantageous for those assigned the parking, typically results in the least efficient use of available parking. During the site visit, a significant number of the reserved spaces were underutilized. When people are not using the spaces (e.g., out sick, on vacation, or traveling), the parking is unable to be used by other parkers. If necessary, provide reserved parking spaces in areas with lower utilization levels (even in on-street areas with underutilized parking) or in areas that are less attractive to downtown visitors/customers. Lot B23-1 should not be used by city employees.

If additional parking must be constructed, expand and/or improve existing surface parking lots to provide additional parking (see Section 3.04). Surface parking spaces lost to future developments could be included in future parking facilities.

- **Allocating Parking for Other BID Employees**

  On-street parking should typically be used for short-term visitor/customer parking (except in situations where on-street parking is significantly underutilized). Long-term parking should be provided in off-street lots/facilities. Therefore, all employers should strongly encourage employees to park in employer owned/leased parking spaces, designated long-term public parking lots, or use other forms of transportation (e.g., transit, bicycling, walking, or carpooling).

  According to the city, there are approximately 511 other employees working in the BID (including courthouse employees). There are currently 1,238 off-street parking spaces available in the BID overall (1,068 of which are in privately-owned parking areas). The peak observed off-street parking demand in the entire BID area was approximately 55% - or approximately 681 spaces (based on the sample area survey). It is assumed that the occupancy surveys completed in September 2012 captured typical weekday employee parking demands.

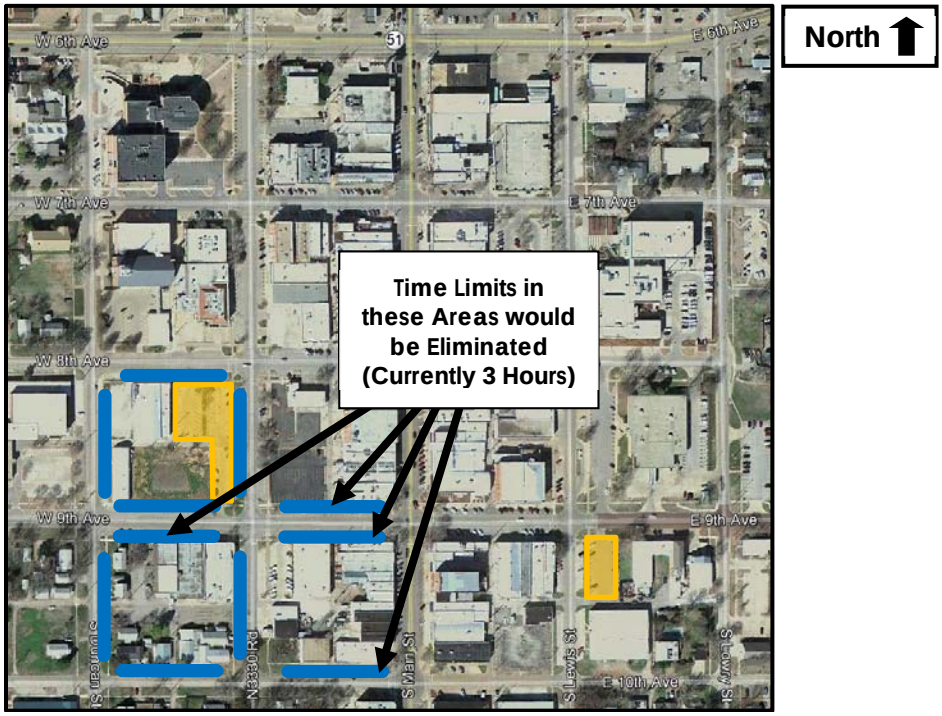
  During the overall peak period of parking demand for BID off-street parking lots, approximately 277 off-street spaces in the smaller BID survey

area were available (based on the effective supply of the lots/facilities). Only 5 of the 28 parking areas surveyed reached their effective capacities – and none of the publicly-owned lots exceeded 85% of their total capacities. Therefore, there appears to be sufficient off-street parking available to meet existing employee parking demands – if employees park appropriately.

In order to encourage BID employees to park in appropriate locations, the following measures should be implemented or continued:

- The city should make sure all BID employers are aware that employees cannot park on-street past posted time limits. On-street spaces are extremely valuable to area businesses. Employers should encourage their employees to park in either employer-owned lots or in appropriate long-term parking locations. Based on observed parking occupancies, long-term public parking should be provided in Lots B5-1 and B31-1. Long-term on-street parking can be provided (or currently is provided) in the locations shown in the following figure (Figure 17 below). The on-street parking on the north and south sides of Block B14 and the south side of Block B15 is currently underutilized. The available areas would provide a total effective supply of 220 spaces (145 on-street and 75 off-street). A limited amount of employee parking could be provided in Lot B23-1 if city employee parking is eliminated.

Figure 17. Possible City-Owned BID Employee Parking Areas



On-street locations are highlighted in blue and public parking lots are highlighted in orange.

- A marketing effort should be undertaken to alert BID employees about available parking locations. Their first choice should be their employer's lot, then available city-owned long-term spaces. Employees should be made aware of the consequences of parking improperly.

- On-street parking time limits should be consistently enforced. To help mitigate parking scofflaws, a tiered approach to parking fines should be implemented (discussed in Section 4.08.3).

- Both on-street and off-street parking occupancies should be periodically reviewed to adjust time limits. On-street parking occupancies of approximately 85% should be the goal of parking management efforts.

- **Residential Parking in the BID**

  While the number of residential units in the BID is limited, there are concerns that existing parking restrictions make resident and residential guest parking difficult. For example, most of the on-street parking in the BID core is time limited; so, long-term parking for residents and guests is either not convenient or not available. In order to improve residential parking in the BID, the following strategies are recommended:

  - The first step would be to define the size of the issue. The city should determine how many residents there are in the BID study area and how many need parking.

  - Like in many downtown environments, BID residents should understand that parking is limited and often consistently enforced. This should be made clear to them when they view residential units and sign leases. Residents should be provided with parking information and the city's website should include information on appropriate long-term parking locations.

  - Long-term parking should first be provided in off-street parking areas. These could be city-owned or privately-owned parking areas. If the residential building has designated parking, that parking should be used first. If the residential building does not have any designated parking, nearby off-street parking supplies should be used (public or private). Ideally, residential parking should be provided as close to the residential unit as possible. The city may need to negotiate the use of private parking and a monthly fee may be required of residents to use the parking. Residential parking permits may be necessary to identify BID resident vehicles. There are approximately 557 surplus off-street parking spaces currently available in the BID Study Area; so,

sufficient parking should be available to meet current and near-term demands.

- As mentioned previously, there are on-street parking spaces in the BID that are currently underutilized. These spaces could also be used to provide long-term resident parking if off-street options are exhausted.

- Areas with significant concentrations of residential units should include one or two short-term loading zone spaces on-street. These spaces could be shared with nearby businesses. While their assigned parking could be located a block or more away, these spaces would allow residents to drop-off or pick-up as close as possible to their residence.

- As new residential units are created in the future, sufficient parking should be provided. This parking could be on-site (e.g., a parking structure under a residential tower), or surface/structured parking on an adjacent block. Large residential developments that lack sufficient parking are often difficult to finance and/or lease. As there is a limited amount of public off-street parking in the BID, new residential developments will likely require the construction of new parking spaces.

4.07.2 Campus Periphery Study Area Issues and Concerns

The following parking improvements are recommended to address parking-related issues and concerns in the Campus Periphery Study Area:

- **Improving Greek Neighborhood Parking Conditions**

  There is currently a shortage of parking available to residents of fraternities and sororities located in the Greek Neighborhood. Assuming one space per resident, the overall shortage could be 54 spaces or more (based on parking data provided from the neighborhood). This shortage will increase as fraternities and sororities expand and Greek membership increases (approximately 10% per year). Parking shortages during house events and Monday dinners also create challenges throughout the school year. The following recommendations are offered to help improve parking in the Greek Neighborhood, as well as surrounding areas:

  - Some houses have surplus parking, while others have significant shortages. To the greatest degree possible, parking should be shared between the various houses to help reduce the amount of on-street parking used by Greek residents. Sharing the available parking (and associated costs as needed) could help reduce parking concerns, improve the neighborhood, and reduce the need to construct new parking. This could make up to 118

spaces available to existing neighborhood residents.

- Where possible, the Greek Neighborhood should work with OSU to help find vehicle storage parking on campus. At some universities, remote vehicle storage facilities are created to store resident vehicles for long periods during the school year. Not all residents need their vehicle every day, so off-site storage should provide an option for at least some Greek residents. The parking should be available in underutilized campus lots, and a shuttle could be available to help Greek residents retrieve their vehicles or return to their house after parking them. If available, off-site parking in private parking lots should also be considered.

- If possible, secure parking for Greek Neighborhood residents in the new Wentz Hall Parking Structure or other future OSU parking facilities.

- Where possible, add angled on-street parking in the Greek Neighborhood. Work with members of the Greek Neighborhood (and other nearby property owners) to identify on-street parking opportunities and determine funding needs. Ideally, the parking would be located completely off the roadway; however, the parking could encroach into the street if drive lanes are adjusted accordingly (e.g., two-lane streets are reduced to one-way). Assuming a 70-degree parking space angle with an approximate vehicle projection (or stall depth) of 19'-3" (as shown in Figure 13 on page 36), potential locations for angled parking are shown in the following figure (highlighted in orange):

Figure 18. Possible Angled On-Street Locations in Greek Neighborhood

If all of the locations could be converted to angled on-street parking, up to 84 net new spaces could be created. This does not include any angled on-street parking that could be created on University

Avenue (as on-street parking is not currently allowed). The addition of angled on-street parking may negatively impact the location and/or availability of sidewalks in the neighborhood.

- If new angled on-street parking spaces are created, these spaces should be designated for Greek Neighborhood use only. This can be accomplished by posting appropriate signage and implementing a parking permit program.

- While adding surface parking in and immediately around the Greek Neighborhood could be an option, removing houses to provide parking lots in the neighborhood surrounding the Greek Neighborhood should be discouraged.

- In situations where parking demand exceeds supply, alternatives for reducing parking demand should also be considered. Reducing parking demands would not only improve neighborhood parking conditions and traffic, but would also provide an opportunity for housing expansions without the associated parking requirement of one space per bed. Options to consider should include:

    - Encouraging new Greek residents to not bring a vehicle and use alternative forms of transportation instead (e.g., bicycles, walking, carpooling, and transit).

    - Working with OSU to see if a car sharing program could be provided in the Greek Neighborhood. This could help reduce the need for some residents to have a vehicle of their own.

    - Marketing and communicating transportation choices to residents of the neighborhood. Discuss the costs and challenges of vehicle ownership (both financial and environmental). Provide assistance in finding alternative transportation methods for residents.

    - Adding accommodations for bicycles in and around the neighborhood. This would include bicycle lanes and racks.

    - Placing limits on Greek parking based on the number of parking spaces available. For example, a house with 30 spaces can only have 30 vehicles parking in the neighborhood. This could be coupled with a residential permit program to encourage appropriate parking behaviors.

- Consider adding a limited number of loading zone spaces in the Greek Neighborhood to provide space for picking-up and dropping-off passengers, as well as to load and unload supplies/materials. The loading zones should provide no more than 15 minutes of parking, and the Greek community should be made aware that the time limits will be strictly enforced. The location of each loading zone should be determined through discussions with members of the Greek Neighborhood.

- In addition to the day-to-day parking demands of Greek Neighborhood residents, there are additional parking demands for events and social gatherings. Only a portion of each fraternity's and sorority's membership lives in their house. The rest of their membership lives in other off-campus housing or on-campus. When events occur, the parking demands for a particular house can be substantial higher than the day-to-day demand. In order to address the parking demands for events and social gatherings in the Greek Neighborhood, the following alternatives are recommended:

    - Event parking needs should be considered and coordinated by the entity charged with overall parking management. This would require a relatively high level of coordination with the Greek community.

    - As the parking demand for these events typically occur during evenings and weekends, the Greek Neighborhood should investigate the availability in nearby commercial, church, or OSU parking lots to provide additional parking. The OSU parking lots on the northeast corner of Ramsey Street and 4th Avenue, or the university lots north of University Avenue could be logical first options for many houses. As many events occur during evenings and weekends, a significant number of parking spaces should be available.

    - Available parking on campus, in lots located further from the Greek Neighborhood, could be used for event parking. When necessary, shuttles could be provided to transport fraternity and sorority members to/from the designated parking location.

    - If events offset (e.g., one house has an event while others do not), available parking should be shared to the greatest extent possible.

    - Using the results of the inventory and occupancy surveys completed for this project, underutilized on-street parking spaces could be identified for use during evenings and weekends for Greek Neighborhood events.

- Fraternity and sorority members that are currently parking elsewhere (e.g., at off-campus housing sites or on-campus) should leave their vehicles parked and use another form of transportation to attend the functions. For example, carpools could be set-up to transport members to/from their residences.

- Where parking problems result from an over utilization of parking in adjacent neighborhoods, additional on-street restrictions (including additional enforcement) could be necessary. This could include restrictions on parking during certain hours and days, or residential parking permit programs.

4.07.3 Parking Issues and Concerns in Neighborhoods

Substantial on-street parking in neighborhoods by nonresidents, and over-parking by residents, can cause many significant concerns including (but not limited to): traffic constriction; loss of parking spaces for residents and residential guests; excessive pollution (e.g., air pollution, noise pollution, refuse); negative impacts on resident safety and security (e.g., emergency vehicle access and lines of sight); decreased pedestrian and bicycle-rider safety; parked vehicles blocking driveways; disruptions in trash collection; and negative impacts on property values. In order to protect these parking areas and associated neighborhoods, the following options should be considered:

- During the field review, there were several instances noted of vehicles parking in front yards or side yards. Parking should be limited to driveways, on-street areas, and garages. While this was attempted in the past, ***Carl Walker*** strongly recommends that the city consider banning vehicles from parking in areas not designed for vehicle parking.

- Each residence should be able to provide one on-property parking space for each bedroom. Given the age of some neighborhoods, this may require the conversion of landscaped areas to parking. The parking could be provided in the front, side, or back of residences. This should be permitted in all cases where parking can be provided in a safe fashion, and when the additional parking does not violate any neighborhood restrictions or city ordinances (e.g., limits on the percentage of land that can be paved or otherwise used for parking). Garages should be counted as parking unless the garage has been converted to livable space and is formally recognized as such by the city.

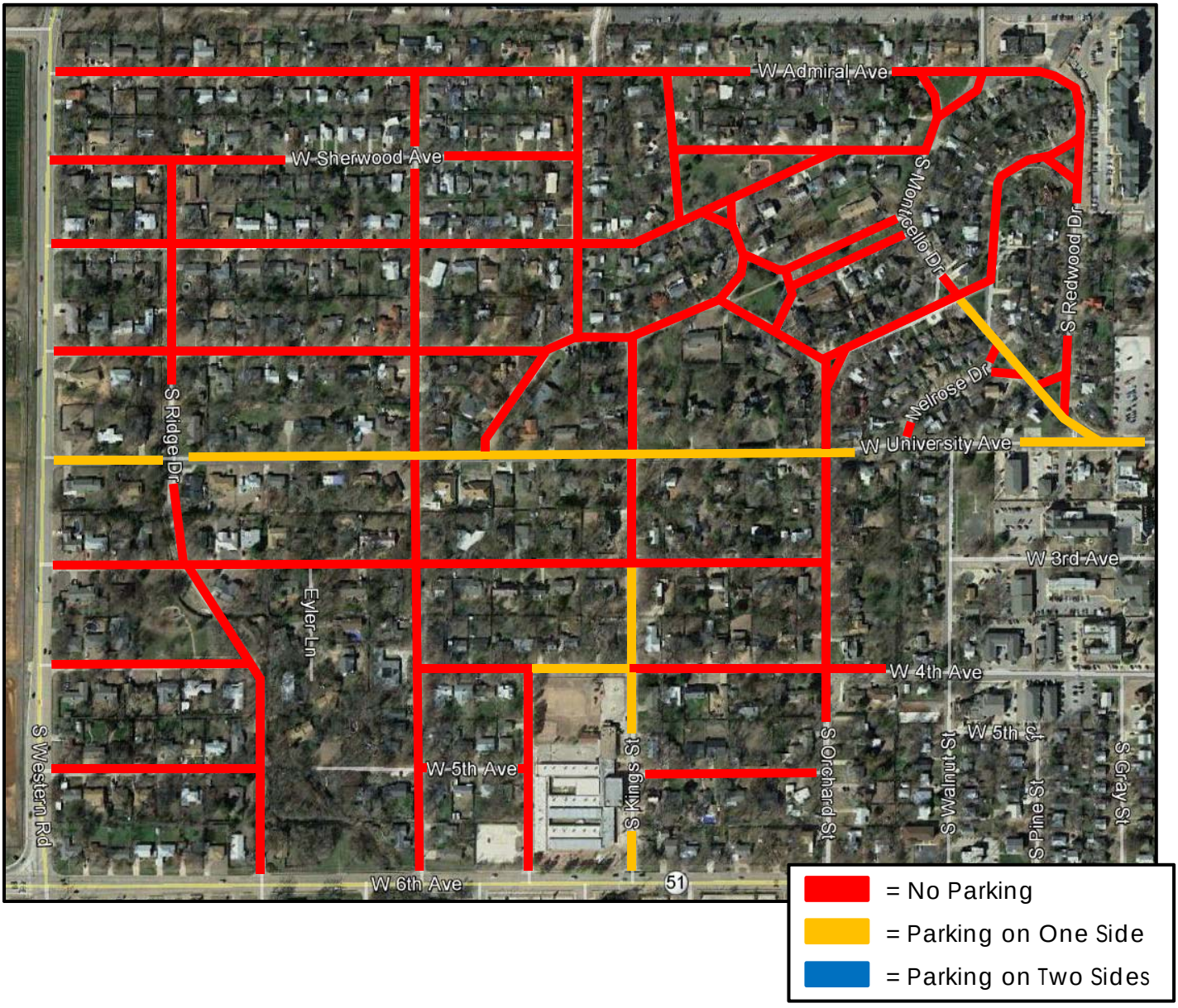
- The exact street dimensions required for on-street parking need to be formally identified by the City of Stillwater. The following dimensions should be used as a starting point for future discussions (assumes a minimum 10'-0" wide traffic lane and a 7'-0" wide parallel parking space on neighborhood streets):

- Minimum width for one traffic lane with parking on one side of the street: 17'-0"
- Minimum width for one traffic lane with parking on both sides of the street: 24'-0"
- Minimum width for two-way traffic with parking on one side of the street: 27'-0"
- Minimum width for two-way traffic with parking on both sides of the street: 34'-0"

Existing street widths in Campus Periphery Area neighborhoods and the adjacent Westwood neighborhood range in width from approximately 18' to 35', with most street widths around 25'. As some neighborhoods in Stillwater were not designed to provide sufficient width for on-street parking and two lanes of traffic, these minimum dimensions could prevent the location of on-street parking on some streets (or sides of streets). In situations where parking can only be provided on one side of a street, city staff should first review safety issues/concerns and then work with residents to determine which side of the street is most appropriate for on-street parking.

Based on street width information provided by the Steering Committee, the following graphic illustrates how the preliminary street dimensions would impact the availability of parking in the Westwood neighborhood (assumes two-way traffic on all streets).

Figure 19. Impact of Preliminary Recommended Street Dimensions on Westwood On-Street Parking



Providing sufficient space for both parking and traffic significantly impacts both pedestrians and bicyclists as well. As many streets in and around the study areas lack sidewalks, pedestrians may feel forced to walk in the street. Bicyclist using local streets may find narrow streets with both traffic and parking less safe. Therefore, parking should only be provided when sufficient space exists to ensure a safe pedestrian and bicycling environment is maintained. Areas with sidewalks would provide more flexibility with respect to accommodating both traffic and parking.

- Areas identified as "no parking" should be clearly signed. Certain no parking areas should also include red curbs to denote the extent of the no parking area (fire lanes, fire hydrants, etc.).

- Parking enforcement in residential neighborhoods should be consistent, yet target significant parking issues. Significant parking concerns can be identified through periodic field reviews and/or complaints received from community members.

- Existing parking and zoning ordinances should be properly enforced prior to forming a residential parking permit district, including creating no parking areas or time of day restrictions as needed. The parking demands in certain neighborhoods can be reduced or eliminated by restricting parking during certain periods of the day.

- The city should develop and approve an ordinance that provides the authority to create residential parking districts (a draft ordinance outline is provided in the Appendix B of this report). The development of residential parking permit districts should include the following elements:

    - District designation, set-up, and on-going management must include input and feedback from residents;

    - Parking management must be flexible enough to meet the needs of each neighborhood or subsections of each neighborhood;

    - Parking policies and procedures must minimize burdens on residents;

    - Parking regulations must include appropriate accommodations for residential visitor parking demands;

    - Policies should be focused on meeting the needs of all residents (e.g., home owners and renters), not just property owners;

    - Parking district costs and fees should be consistent with cost to implement and manage the district.

- After the creation and implementation of a residential parking permit district, on-going monitoring and evaluation will be required to ensure the program meets the needs of the neighborhood and the expectations of the city council. On-going monitoring would include periodic reviews of parking enforcement data, periodic parking occupancy data collection efforts, and photo-documentation of parking conditions.

- Parking and vehicle queuing related to schools located in neighborhoods can be a significant concern. Parking and vehicle queuing related to school pick-up and drop-off was observed at Westwood Elementary during the field work in September 2012. While there were moments where vehicle queuing created significant traffic on streets around the school, the conditions were not atypical for school pick-up and drop-off and the process appeared relatively efficient (lasting only 15-20 minutes). Without

significant land to create a larger drop-off/pick-up area (without using playground space), the process created by the school appears to be reasonably effective. However, there are options to improve conditions related to school drop-off and pick-up. The following are recommendations to improve day-to-day school related parking and vehicle queuing issues:

- Students that live further than one mile from the school should use school buses to the greatest extent possible. The school should market the use of school buses, provide incentives for students that ride the bus (special drawings for prizes, special events for bus riders, etc.), and communicate to parents how their transportation choices impact neighborhood residents.

- Families that live within one mile of the school, especially those that live in the neighborhood surrounding the school, should be encouraged to walk or bicycle to school (depending on the ages and abilities of the children). To mitigate safety concerns, parents could be encouraged to coordinate "walking buses" – or walking in groups to and from school with a parent (or group of parents). This is a great way to get exercise and meet new friends.

- Limiting on-street parking around schools during drop-off and pick-up times (or throughout the school day) can provide extra space for vehicle parking and queuing. For example, creating no parking zones around schools can provide space for vehicles to queue without clogging traffic lanes.

- In extreme cases, additional monitoring could be needed to help ensure streets remain open to traffic and vehicles move efficiently. This could mean that a volunteer or a parking enforcement officer would be stationed at the school during the first few pick-up and drop-off times to help parents understand the process. Situations can be monitored periodically throughout the year to determine if additional staffing is needed.

o The impact of parking in neighborhoods during special events should be mitigated to the greatest degree possible through better coordination and management of parking demands, improved communication of appropriate parking locations, enforcement of existing parking regulations, and maximizing the utilization of available public and private parking facilities (e.g., using the private parking located across the street from Westwood Elementary during evenings and weekends).

4.07.4 Other Parking Issues and Concerns

These issues and recommendations could apply to either of the study areas, or to other areas in the city.

- **Improving the Utilization of Available Parking Resources**

  - The following strategies to improve the utilization and management of existing on-street parking spaces are recommended:

    - As mentioned in Section 2.0 of this report, a significant amount of underutilized on-street parking exists on several streets. In order to better utilize the parking in these areas, all of the on-street parking (except in some residential areas) should be marked, and angled parking should be provided in all areas with sufficient dimensions (see page 36, Figure 13). The on-street parking could be marked when needed, as the new developments are constructed. Time limits should be set to encourage the use of underutilized areas for longer-term parking and discourage long-term parking in areas with high levels of utilization.

    - Adjust on-street time limits to improve the utilization of currently underutilized areas (on-street block faces with observed peak parking utilization below 40%). This could include adjusting the following time limits (in consultation with adjacent land uses):

      - BID Study Area (by block and block face, as shown in Figure 17 on page 58) – Could increase the utilization of up to 33 spaces:

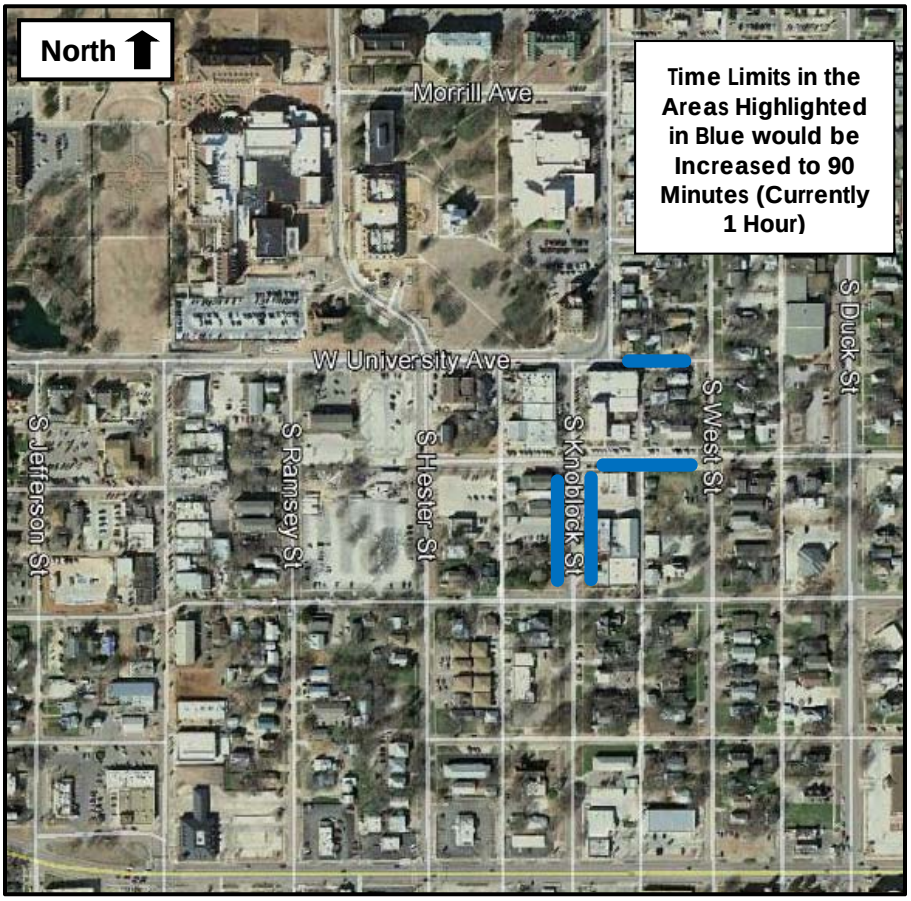
        - B-6 North: Remove current time limit of 3 hours.
        - B-14 North: Remove current time limit of 3 hours.
        - B-14 South: Remove current time limit of 3 hours.
        - B-15 South: Remove current time limit of 3 hours.

      - Campus Periphery Area (by block and block face, as shown in Figure 20 on the next page) – Could increase the utilization of up to 35 spaces):

        - C-14 East: Increase time limit from 1 hour to 90 minutes.
        - C-19 North: Increase time limit from 1 hour to 90 minutes.

- C-19 West: Increase time limit from 1 hour to 90 minutes.
- C-20 Mid-block: Increase time limit from 1 hour to 90 minutes.

Figure 20. Recommended Time Limit Adjustments – Campus Periphery Area



- Update current on-street parking regulations (ordinances) to discourage people from reparking in on-street parking areas after time limits expire. This would include requiring vehicles to completely leave the block (and possibly immediately adjacent block faces) once the time limit has expired.

- In order to keep on-street parking spaces in the Campus Periphery available for customers of local businesses through typical business hours (until 6:00 p.m. or 7:00 p.m. for retail shops and later for restaurants and bars), consider extending parking time limit restrictions and enforcement until 7:00 p.m. Extended time limit hours and parking enforcement would discourage evening students at OSU from parking in on-street spaces needed to support nearby businesses. OSU students should park on-campus to the greatest extent possible. OSU students are able to parking in on-campus parking areas after 5:00 p.m.

- Parking for construction workers should be provided on-site, in designated staging areas, or in off-street parking facilities with appropriate time limits. Construction parking should not be permitted in on-street spaces. The City of Stillwater and/or OSU should clearly communicate construction parking restrictions and include parking regulations/expectations in construction contracts. If necessary, temporary adjustments in time limits and/or parking enforcement policies may be needed to encourage appropriate parking behaviors.

- Consider the following options to improve the utilization and management of existing off-street parking spaces:

    - To the greatest extent possible, the city should work with private parking lot owners to improve the utilization of private facilities. In the BID survey area, 14 of the 20 private facilities reviewed had parking utilizations below 70% (6 had peak parking occupancies of 50% or less). In the Campus Periphery survey area, 14 of the 23 lots had parking utilizations below 70% (6 had peak parking occupancies of 50% or less). Strategies for improving the use of these spaces are outlined in Section 3.04 of this report (page 26). The following graphics (Figures 21 and 22 on the next page) illustrate the locations of the private parking areas that should be contacted. There were 357 underutilized spaces in the BID Study Area and 306 underutilized spaces in the Campus Periphery Area during the peak period of observed parking occupancy for off-street parking in each area.

Figure 21: BID Area – Private Off-Street Parking Areas with Underutilized Spaces

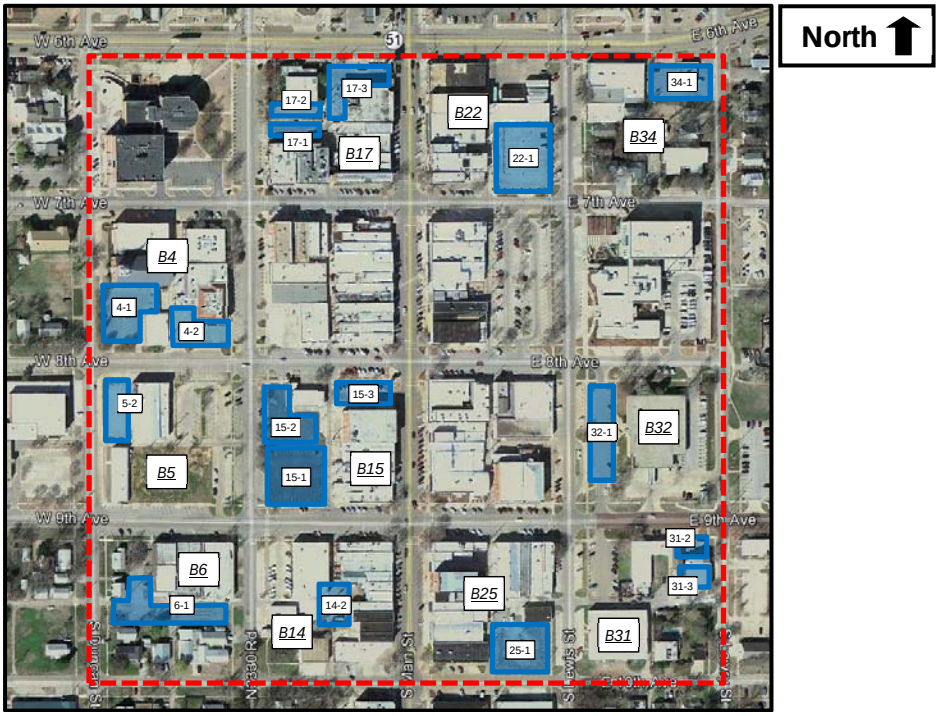
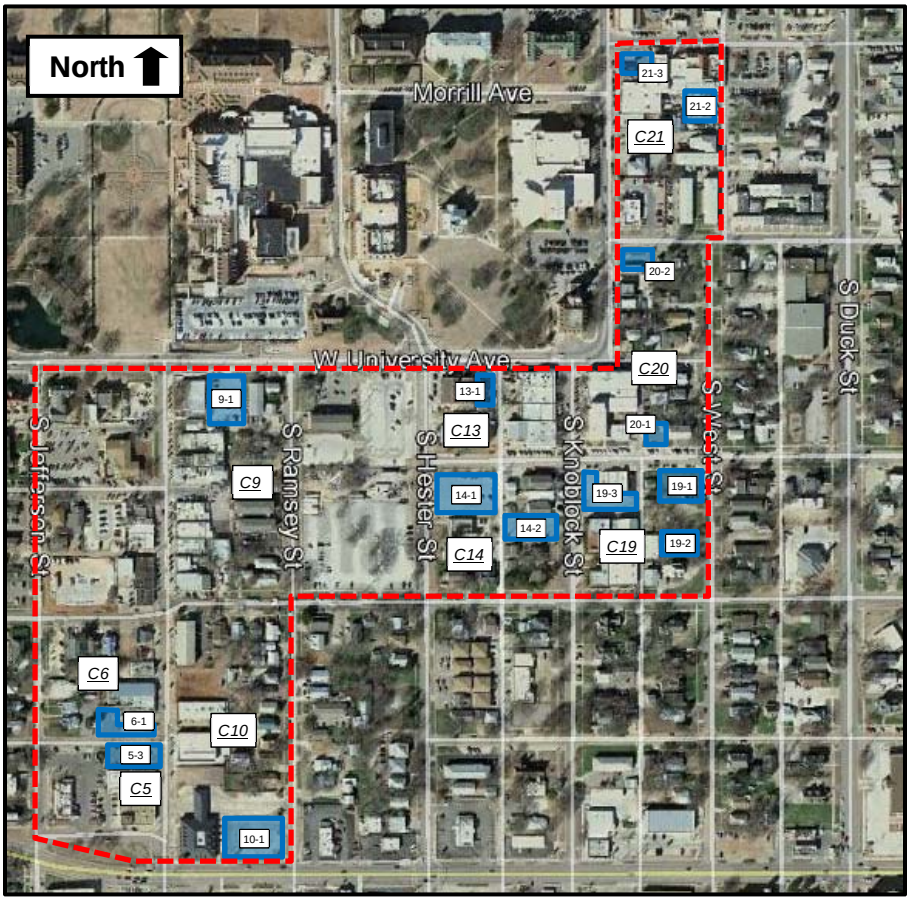


Figure 22: Campus Periphery Area - Private Off-Street Parking Areas with Underutilized Spaces



- The peak parking utilization of the Teubner Parking Structure was only 56%. Assuming an effective supply of 90%, there are approximately 31 unused parking spaces. These spaces could be used to provide employee parking and/or additional city vehicle parking. The city should contact the owner of the facility to negotiate the use of the underutilized parking spaces.

- If some parking demand for the public parking lot located on the southwest corner of Lewis Street and 7th Avenue could be relocated to other underutilized areas (e.g., the Teubner Parking Structure or underutilized on-street spaces), a limited number of long-term parking passes should be made available to nearby businesses to help reduce on-street parking demands. The passes would not reserve individual parking passes for any particular user, but would instead allow overtime parking when needed.

- **Managing Event Parking Demands**

  Coordinating parking for special events, almost more than any other parking management activity, requires a coordinated and cooperative effort with the larger community. Some of the keys to success in this area include the development of a well-defined special events policy and detailed systems for the coordination of special events.

  An important dimension is the development of strong relationships with key stakeholder groups that are active in the BID and the Campus Periphery. Providing practical incentives for event groups to communicate with the parking program during their planning processes is critical. Also, be consistent in providing those that work with the parking program a high level of service. Conversely, provide disincentives for those that ignore the special events parking policies or chose to not include parking in their planning.

  Unfortunately, there were no significant events during the period of field observations in September. However, the following recommendations are provided to help the City of Stillwater begin to develop effective event parking management strategies:

  - Identify individuals or organizations that stage events during the year. Work closely with these individuals and other various event venues to identify parking needs and ensure they are addressed.

  - Identify appropriate areas for event parking using signage, as well as maps or other information distributed to event attendees. This could include public parking lots as well as private parking areas where space is available and use is approved (common private parking lots

used for events include churches, banks on weekends, and lots associated with businesses that are closed on weekends or during evening hours). Use temporary directional signage to help people find available event parking.

- Identify areas that are not approved for event parking. Use signage to notify people of parking restrictions.
- For larger events, staff may be needed to help people find parking. This could include people to help "flag" vehicles into lots, as well as people to close lots once they are full and direct parkers elsewhere.
- When possible, avoid holding events in parking lots to ensure sufficient parking is available for event attendees.
- For very large events, remote parking may be needed. Event attendees would be directed to available parking areas further from the event or venue and would be bused in. For example, a large downtown event could utilize parking at OSU and bus attendees to/from the event.
- To the greatest extent possible, residential streets should not be used for event parking. This could require posting temporary no parking signs in neighborhoods to discourage parking. If necessary, event parking enforcement may also be needed.

- **Implementing Pay Parking in the Future**

  In the late 1970's, parking meters were removed from downtown Stillwater in the hope of encouraging more visits to the area. Based on observed parking occupancies, there does not appear to be an immediate need to implement pay parking (except perhaps to start saving funds for a future public parking structure or other improvement). Only 4 of the 54 BID block faces surveyed during the occupancy counts had on-street parking occupancy levels of 85% or higher. None of the city-owned off-street parking lots had parking occupancies greater than 85%. Approximately 13 of the 31 Campus Periphery block faces surveyed had average occupancies exceeding 85% - therefore, pay parking could be needed here before the BID area. However, pay parking should be an option for the future.

  Pay parking could help improve parking management in a number of ways. First, pay parking can help distribute parking demand throughout the system by providing choices to parkers (e.g., higher costs for convenient on-street parking and lower costs for off-street parking). Second, pay parking can help reduce traffic (and associated pollution) due to parkers searching for the spaces closest to their destinations. Third, pay parking can help ensure that on-street spaces are more available as some people currently

parking on-street will decide to park off-street at a reduced cost (or possibly at no cost initially). This will improve the available of parking for true visitors and customers. Finally, pay parking will help generate funds for parking system operations, management, and future development needs.

The following strategies are recommended to determine when and how to implement pay parking:

- The implementation of pay parking should be based on either observed parking demands or a demonstrable need to generate funds for future parking improvements. Revenues generated by implementing pay parking should be used to improve parking in the area in which the revenues were generated. Pay parking should not be implemented just to collect money for general city uses.

- The implementation of pay parking will require a significant amount of communication with those impacted (e.g., business owners, property owners, downtown employees, and customers). This would include (but not be limited to):

    - developing an implementation plan and schedule to share with the community;

    - developing a plan for using collected funds (focusing on improving parking conditions in the area in which the funds are collected);

    - meeting with community stakeholders to discuss the ramifications of implementing pay parking, possible operating methodologies, and mitigating business owner and visitor concerns;

    - conducting public input sessions to discuss the issue, the reasons why pay parking is being implemented, and the potential uses of the funds collected;

    - press releases and advertisements issued months in advance to help make the public aware of the issue;

    - providing updates throughout the process, including advising the community about implementation schedules; and,

    - providing staff in the field to help the public use the new equipment and answer questions.

- On-street parking would likely be the first place to implement pay parking. If average on-street parking occupancies over an area of four to six blocks exceed 85% after appropriate time limits are

imposed, pay parking should be seriously considered. Potential technologies, including significant pros and cons, are provided in Appendix C.

- If/when pay parking is implemented, on-street parking rates and citation fines should be established that demonstrate the value of on-street parking. On-street parking rates should be higher than those for off-street parking.

- If pay parking is implemented on-street, off-street parking occupancies should be monitored to determine if pay parking should be implemented off-street as well. Potential off-street parking revenue control technologies, including significant pros and cons, are provided in Appendix C.

Pay parking can be an effective tool to encourage preferred parking behaviors and help keep valuable on-street spaces available for the short-term patrons coming into either the BID or the Campus Periphery areas. Given the importance of providing customer parking, the primary beneficiaries of this policy change would be merchants located in these areas.

4.08 Parking Enforcement

The success of any parking management program requires an effective enforcement component. Regulations are intended to produce parking patterns that utilize the on and off-street parking inventory safely and efficiently; this will only happen if time restrictions, no parking areas, and other rules are enforced with sufficient frequency so that drivers see an advantage to parking legally. Building a successful enforcement program requires making many critical strategic and tactical decisions which can greatly impact a program's success and ability to adapt with changing conditions. This sub-section addresses several of those key decision areas.

4.08 Parking Enforcement

Short-term Recommendations

- Define appropriate parking enforcement goals and effectiveness measurements.
- Determine appropriate methods of collection.
- Upgrade parking enforcement technologies to support a tiered fine structure and enhanced monitoring of time limits.
- Increase enforcement fines and payment timeframes.
- Consider using "community parking ambassadors" to provide parking enforcement, as well as customer service and basic area security.
- Consider including a tiered fine structure to mitigate negative impacts on visitors.
- Communicate parking enforcement policies and goals to the community.

Long-term Recommendations

- Consider moving the parking enforcement program to a vertically-integrated public parking management organization.
- Monitor parking enforcement activities and ensure goals/standards are met.
- Implement a formal parking enforcement standard operating procedures manual.
- Update program goals and policies as necessary.
- Conduct periodic surveys of parking utilization and turnover/duration to adjust parking management strategies and enforcement regulations.
- Consider providing a first-level administrative appeals process prior to requiring a hearing at the municipal court.

The City of Stillwater currently provides citywide parking enforcement services from 8:00 a.m. to 5:00 p.m. Monday through Friday. Parking enforcement includes foot patrols and mobile (vehicle) patrols. Enforcement officers are assigned to zones of the city and the officers are rotated between the various areas. Officers also respond to parking-related complaints from the community as needed. In the last fiscal year, the city issued 17,076 parking citations. Of the citations issued, approximately 4,116 (24%) were for overtime parking in the BID, on Knoblock, or on Washington. The total number of citations issued in 2008 includes warnings and voids. The enforcement program had expenses of $183,059 and revenues of $187,335.

4.08.1 Parking Enforcement Goals

Many people believe that revenue generation is the primary goal of enforcement. However, the opposite is usually true. It is critical that those associated with the parking program recognize that enforcement is intended to contribute to achieving the desired mix of parking behaviors. As such, key customer service values such as education and fairness must be stressed. It follows, therefore, that key measures of enforcement program performance should include parking indicators such as occupancy and turnover, violation and capture rates, as well as public acceptance of the program.

This is not to say that the successful collection of fines and penalties is not among many legitimate goals. Parking citations will only have a deterrent effect if they are issued correctly, processed in a timely manner, and the resulting fines and penalties are collected. Furthermore, citation revenues are a favorable byproduct of enforcement, and are particularly valuable if used to support and enhance the parking program.

4.08.2 Responsibility for Parking Enforcement

Responsibility for parking enforcement in Stillwater currently rests with the Police Department. Three full-time Parking Enforcement Officers (PEO's) provide parking enforcement for the entire city, including other duties as assigned. The PEO's provide the bulk of parking enforcement in the city, although sworn police officers can also issue parking citations.

Placement of enforcement within the local Police Department is typical of many jurisdictions, especially smaller cities and towns. It can have a number of advantages:

- Reliance on an existing command structure.
- Use of existing communications networks.
- Availability of PEO's for emergency duties, such as intersection control, as needed.
- Greater respect for PEO's as members of Police organization.

However, there can also be disadvantages:

- Second class status, with parking enforcement not viewed as "real" Police work.
- Excessive diversion to non-enforcement activities.
- Separation from the larger parking management program, including failure to relate enforcement activities to other parking-related goals.
- Police departments are not often experienced in managing the "backend" collection programs necessary to achieve high citation closure rates.

A popular alternative to Police oversight of parking enforcement is to place the function in the governmental unit with responsibility for the overall parking mission. For Stillwater, this could be a city department tasked with parking management, a future Parking Authority, or some other parking management entity.

Benefits of this approach include:

- Directly linking enforcement activities and personnel to the larger parking mission.
- Greater likelihood that performance will be evaluated in conjunction with parking goals and actual parking dynamics.
- Devotion of all PEO hours to parking-related duties.
- Citation fines and penalties become one component of a larger accounts receivable system managed by the responsible unit (especially if an Authority model is chosen).

Disadvantages include:

- A need to build new organizational structure within the "owning" department or authority.
- A need to share Police resources (such as communications networks) or build them from the ground up.
- Potential lowering of public respect for PEO's.

Consistent with the recommendations provided for parking system organization and management, ***Carl Walker*** recommends that the city consider transferring responsibility for parking enforcement to a vertically-organized department or authority responsible for the overall Stillwater public parking program. However, we believe that police officers should continue to have the ability to enforce health and safety regulations as needed. As suggested above, transfer of the PEO's would increase the likelihood that enforcement goals and performance are aligned with overall parking goals, and facilitate the coordination of all parking related resources.

Transferring parking enforcement responsibilities would also provide the opportunity to transform the responsibilities of the PEOs from only parking enforcement (and related police duties) to "Community Parking Ambassadors."

Instead of only enforcing parking regulations or assisting with traffic direction, the Parking Ambassadors could also provide visitors with information and directions, as well as provide a level of additional security in and between parking facilities. This will improve perceived security in the community and will help improve overall customer service.

4.08.3 Defining Parking Enforcement Policies/Practices/Staffing

If the city's parking plan is to be successful, it is essential that enforcement activity not be driven by anecdotal evidence or become a response to the loudest voices. Rather, there must be a consistent thread running through the larger goals of the program: the policies established and strategies used to achieve those goals, the regulations which govern their application, the application of enforcement to achieve the goals, and how success is evaluated. That common thread is data, collected at regular intervals, on occupancy, turnover, violation rates and capture rates, and the collection of direct parking revenues and citation fines. Thus, for example, when the city determines that it needs to meet a particular level of parking demand on certain blocks, it would decide on a policy and approach (time limits, meters with time limits, etc.), make sure the proper regulations and signage are in place, assign PEOs to enforce those regulations, measure the impact against a desired goal (such as occupancy of 85-90%), and then adjust time limits, future meter rates, patrol assignments, fines, etc. to reach designated parking goals.

To be most useful, industry "standards" should be adapted to local conditions and needs. The following standards are presented as possible starting points for setting goals for Stillwater:

- Overall public parking occupancy rate: 85-90%;
- Overtime violation rate: 10%;
- Overtime capture rate: 20-25%;
- Average duration of stay: 70-120% of time posted limits.
- Citation collection rate: 85% (currently 75%)

In addition, ***Carl Walker*** recommends the City of Stillwater track the following primary parking enforcement performance measures. Performance measures are important as they can be used to establish important benchmarks, compare data from year to year, determine the impacts of changes in management strategies and technologies, measure the effectiveness of staff members, identify operational inefficiencies, determine the effectiveness of dollars spent on enforcement, and report on the performance of the parking enforcement program.

- Parking Enforcement Officers per Public Parking Space (this measure helps determine the efficiency of enforcement staffing levels and can help determine the impact of future enforcement efficiency improvements)
- Parking Citations per Enforcement Officer

- Citation Voids per Enforcement Officer
- Citations Issued by Enforcement Zone per Officer (this measure helps determine the efficiency and effectiveness of individual enforcement staff by providing a comparison of citation counts between officers in specific zones)
- Enforcement Revenue per Citation
- Enforcement Expenses per Citation
- Citation Collections versus Total Citations Issued (currently tracked by the city)
- Citation Collection Time Frames (average days to collect citation fines)

Ideally, the program's goals and policies would be developed through a formalized process led by the department or organization tasked with parking management, but also incorporating input from local businesses, residential communities, city development staff, and staff involved in parking management. Additionally, as suggested above, such goals should be reflected in specific, measurable targets for public parking that might be impacted by development and an increase in parking demand.

Following this model has a number of key benefits:

- It allows enforcement activity to be directly linked to clear, non-monetary goals.
- By documenting reality, it moves discussion from "what is happening" to what should be happening and how to move things in the proper direction.
- It provides elected officials with specific data to evaluate complaints from residents, businesses, etc.
- It supports better-informed decisions regarding the number of enforcement personnel needed and how/where they should be deployed.

In our experience, the existence of hard data and analysis often produces greater support for enforcement and other parking management strategies. For example, some merchants will oppose adequate enforcement until shown clear evidence that their customers cannot park near their stores because employees and/or other owners park all day along retail curbsides. For this reason, it is recommended that the entity managing the parking program have sufficient resources to conduct such analyses on a regular basis (e.g., parking occupancy surveys and turnover/duration surveys). This can be done by a city or authority analyst, by use of consultants, or a combination of the two.

The current general enforcement fines in Stillwater are $5.00 for overtime parking, $10.00 for improper parking, and $15 for hazardous parking. These fines automatically double if the fine is not paid within 48 hours. Data for enforcement fines for comparable cities was not available for this report. However, based on enforcement fines in Enid, Oklahoma and at Oklahoma State University (OSU), as

well as on data collected for other similar downtowns across North America, it appears that fines in Stillwater are low. It is recommended to increase the enforcement fines to better match those in Enid and at OSU. Doubling the fines is recommended ($10.00 for overtime parking, $20 for improper parking, and $30 for hazardous parking).

In addition, a longer grace period is recommended before increasing the fine. Enid provides 5 days and other communities reviewed by ***Carl Walker*** range from 7 to 14 days. When the fines are increased, the grace period before fines double should be increased to at least 5 days.

One issue that often arises during the discussion of parking enforcement is the fear that increased parking enforcement will discourage people from visiting an area, or will unfairly inconvenience those that do visit. In order to help mitigate this fear, an approach that reduces the impact on area visitors and increases the penalties on continual parking policy violators is recommended. This is typically achieved through the use of an escalating fine structure. For example, the first ticket for a specific violation received within a certain timeframe (e.g., within six months or per year) is an automatic warning. The second ticket received within the set timeframe would result in a fine. The third ticket received for the same offense within the set timeframe would result in a higher fine, perhaps double the original fine. The fine would continue to escalate to a maximum fine to discourage breaking the same regulation. This would reduce the impact on visitors, as it is less likely they will continually break the rules. However, the penalties will continue to grow for area employees continuously abusing set parking time-limits. A tier fine structure is recommended as follows:

- Fines would be subject to increases for repeat infractions if multiple violations are received within six months.
- The first violation would result in an automatic warning for overtime violations only. Improper parking and hazardous violations would result in a fine on the first offense.
- The second violation would result in the standard fine (based on the recommended increases). Fines would double after 5 days if unpaid.
- The third violation would result in double the standard fine (e.g., $20.00 for overtime parking). Fines would double after 5 days if unpaid.
- The fourth violation, and subsequent violations, would result in triple the standard fine (e.g., $30.00 for overtime parking). Fines would double after 5 days if unpaid.
- Vehicles with two or more unpaid violations would be subject to immobilization and/or impoundment.

Because so many decisions remain to be made in the city, it is neither possible nor practical to make firm recommendations regarding how the city should pursue parking enforcement technology at this time. Decisions regarding the introduction of pay on-street parking, the extent of time limits, the use of permits, the implementation of a tiered fine structure, etc., will materially impact the type of technology needed and the level of sophistication needed to integrate that technology. Moreover, the technology is advancing rapidly in both capability and potential for integration; therefore, available solutions and options for implementation may be very different in as little as six months. However, it is recommended that the city investigate alternatives for upgrading parking enforcement technology (hardware and software) as soon as reasonable in order to implement the recommended tiered fine structure. The cost of upgrading enforcement equipment (e.g., handheld computers and printers) and software is estimated at $65,000 to $80,000 (depending on features selected). This estimate includes costs related to the migration of existing enforcement system data. These costs could be reduced if the city and OSU work together to select similar technology and share on-going maintenance and software subscription costs.

Also, it is recommended that the city investigate integrating mobile license plate recognition (MLPR) equipment to help track time limits and vehicle movement more efficiently. The MLPR system uses vehicle mounted cameras and GPS software to automatically record vehicle license plates, track parking durations, and alert enforcement staff of violations. The equipment can also identify vehicles that are moving from one space to another to avoid posted time limits. While this equipment is relatively expensive (estimated costs range from $50,000 to $100,000 per vehicle), parking enforcement can be more efficient and effective.

4.08.4 Administration of the Adjudication Process

Adjudication is an important aspect of parking enforcement. Even the best enforcement programs issue some citations for which the vehicle owner is not ultimately liable. Therefore, it is critical that the public have a fair, accessible process by which they can contest a citation. A sound, fair adjudication process helps validate the entire enforcement effort.

Currently, individuals receiving a parking citation in Stillwater can schedule a hearing in front of a municipal judge. Parking appeals are heard one day per week (Wednesdays). Parking citations appeals for violations related to parking for the physically challenged are processed on the regular court docket. Parking enforcement officers currently document all citations, except those for overtime parking, with photographs and diagrams to assist with clarifying infractions and appeals processes.

Ideally, citation recipients wishing to contest a fine should be offered an administrative review by email, regular mail, or by telephone prior to more formal action being required. Parking system staff would be authorized to dismiss certain citations based on specific documentary evidence (such as a disabled placard). If the citation is upheld and the recipient remains unsatisfied, he or she could be required to post the fine and have a hearing before a municipal judge. If still

unhappy, he or she can pay a fee and schedule a hearing in higher level court. At the last two stages, all posted fines and fees would be returned if the citation is dismissed.

It is recommended that the hearing process be separated organizationally from enforcement. This could be done in several ways. One option, followed by many cities, is to use a per diem attorney as a hearing officer. This would probably require two days a month, perhaps less. Another option is to choose someone from the parking program with sufficient subject matter expertise, but not directly associated with parking enforcement staff or duties.

4.08.5 Collection of Fines and Penalties

In the discussion of enforcement goals, it was stressed that revenue should not be the primary goal of parking enforcement. While this is true, parking managers must also do everything practical to collect all fines and penalties once imposed on violators. Citations lose their deterrent value if the jurisdiction collects only a small percentage of the citations for which the vehicle owner is found liable.

Fortunately, the collection tools and supporting technology available to cities have improved in recent years, and the city can employ additional tactics.

Imposition of late penalties

If citations remain unpaid or uncontested for a certain amount of time, the fine is amount is increased. However, the longer one has to make up his or her mind about a parking citation, the greater the chance it will be forgotten or ignored. While the city policy is currently 48 hours before a citation is doubled, many municipalities provide a window of up to 15 days.

Noticing

Additional notices could be sent to parking violators concerning outstanding parking tickets.

Vehicle Registration Non-Renewal

If allowed under Oklahoma law, vehicle owners could be required to satisfy outstanding parking citation debt before renewing his or her registration.

Booting/Towing

Vehicles found with at least two citations can currently be impounded if found parked in violation. This practice should be adjusted to make it more effective and consistent.

While these changes may require adjustments to existing city codes, ***Carl Walker*** recommends the following strategies for consideration:

- Vehicles should be eligible for impoundment regardless of whether or not the vehicle is parked in violation. Vehicles that park in public

parking spaces and have the requisite number of outstanding citations should be immobilized and/or impounded.

- The parking enforcement program should have the ability to immobilize vehicles with the requisite number of outstanding citations, at least until the vehicle can be impounded.

Credit Bureau Reporting

Many cities are now reporting outstanding parking fines to one or more of the national credit reporting agencies. In today's economic climate, a poor credit report could prevent an individual from getting credit, increase the interest rate he or she must pay, or even make obtaining employment difficult. Therefore, most vehicle owners have a strong incentive to protect their credit rating. However, this tool must be used carefully. Many cities consider it too harsh, and its use can lead to numerous complaints. It is important that the parking system obtain the informed consent and support of elected officials before starting such a program.

Use of Collection Agencies

The city could contract with a collection firm specializing in parking fines. Such firms know the issues associated with parking citations, and have programming in place to accept vehicle-based referrals and report payments for application to the correct plate/citation. The city must be careful, however, to structure any such contract so that the vendor is not rewarded for collections which they did not actually produce. Many such contracts, for example, do not pay the agency a fee for payments following the booting of a vehicle or on payments made for citations while filed at DMV for registration non-renewal. If the city does opt for additional collection services, the city could pass on the collection fees to the violator as an additional penalty.

By enhancing its citation collection efforts, the City of Stillwater can both boost its parking-related revenues and increase the deterrent impact of citations in modifying parking behavior.

4.09 Loading and Delivery

During the parking inventory and occupancy counts, survey staff did not observe any significant occurrences of delays or inconveniences associated with delivery vehicles in the either study area. Currently, delivery vehicles park on-street, in off-street parking facilities and/or in no parking areas to deliver products and services to area businesses. There are currently no designated loading zones in either study area.

4.09 Loading and Delivery

Short-term Recommendations

- Work with the community to determine appropriate loading zone locations and policies.
- Delineate loading zones in each area as needed by marking curbs, pavement, and installing signage.

Long-term Recommendations

- Update loading zone locations as appropriate.

Delivery vehicles can impede traffic flow, block alleyways, block visitor parking spaces, and inhibit pedestrian visibility. Deliveries can often create an environment in conflict with visitor and employee parking, pedestrians, and other groups. However, delivery vehicles are an inevitable component of area businesses. Obviously, the loading/unloading needs of delivery vehicles will increase as commercial areas continue to develop.

Although delivery vehicles cannot be removed from either area, their impact can be minimized through coordinated efforts among area businesses. Potential strategies for addressing delivery vehicle and loading space challenges could include the following:

- The city should identify specific delivery vehicle concerns and work with area businesses to encourage deliveries during off-peak parking periods (e.g., mornings), as well as encourage the use of smaller delivery vehicles whenever possible.

- Delivery vehicles should be discouraged from parking on narrow streets and in no parking zones. Delivery parking in these areas can cause traffic delays, cause visitors to wait to enter or exit the on-street public parking and can cause pedestrian obstacles.

- The city should consider the creation of loading zones in strategic locations. The loading zones would provide time-limited parking for delivery vehicles or private vehicles, and provide a designated loading area. The zones should be appropriately marked, typically with yellow curb paint, stenciling on the pavement, and signage. These loading zones should be developed with assistance from area businesses and future developments in order to mitigate delivery problems as demand grows.

    - Loading zones should be provided near retail establishments that sell large or heavy items. For example, retail stores that sell or repair furniture, musical instruments, electronics, appliances, and pet supplies need loading zones.

    - Loading zones can also be needed near multi-unit residential buildings. For example, small loading zones near apartment complexes or Greek housing can provide for passenger loading/unloading without using standard parking spaces, forcing people to search for available parking, or encouraging people to park illegally or unsafely.

    - In most cases, loading zone time limits should be set at no more than 15 minutes.

4.10 Integrating Parking and Transportation

The concept of integrating transportation and parking elements as part of the larger strategic vision for the Stillwater should support the adoption of a "Park Once – Pedestrian First" planning concept. This concept encourages employees and visitors to park their vehicles in one location and then use another form of transportation to move around the community with excellent pedestrian, transit, parking, and bicycle accommodations. This

concept will become very important as the BID and Campus Periphery continue to develop.

Several key action elements are needed to achieve this vision and are outlined below:

- Provide adequate transportation options for people visiting/working each area. As parking management changes in the future (e.g., improved parking enforcement, increased utilization, and pay parking) other transportation options will become more attractive. Options could include (but not be limited to):
    - Attractive and safe pedestrian linkages throughout each area.
    - Encouraging telecommuting programs for area employees.
    - Preferential parking for registered carpools/vanpools (e.g., prime parking spaces, reduced parking fees/rates)
    - Ensuring sufficient bus/shuttle routes and headways.
    - Adequate bicycle lanes and racks/lockers. The City of Stillwater is already well on its way with this alternative as it was recently designated a Bicycle Friendly Community (Bronze Level). Existing city code currently provides requirements for bicycle parking.
    - Providing reduced cost or free transit passes.
- Ensure streets and sidewalks adequately serve the needs of pedestrians, transit users, bicyclists, and vehicles with the focus on serving pedestrians first. This element can be supported by:
    - The creation of safe, attractive, shaded, and inviting pedestrian linkages to connect destinations and parking facilities.
    - Ensuring pedestrian crossings across local streets provide sufficient time for people to cross. Signalized crosswalks should be timed to provide sufficient time for people to cross safely.
    - Providing audio signals at crosswalks to alert people with visual impairments when it is safe to cross a street.

4.10 Integrating Parking and Transportation

Short-term Recommendations

- Market transportation options for community visitors, employees, and residents. Focus on the benefits of using alternative forms of transportation.
- Where possible, improve public transportation alternatives.
- Ensure adequate bicycle and pedestrian access is provided.
- Encourage a "park once – pedestrian first" environment.

Long-term Recommendations

- Update transportation demand management strategies and incorporate new programs designed to reduce parking demands.
- Incorporate first-level retail in future parking structures.
- Consider reinstituting pay parking in the future.

- Where necessary, using traffic calming strategies such as lower speed limits, on-street parking, lighted crossing paths, etc.

- Where possible, include bicycle lanes on roadways. Promote "complete streets" and sharing of the roadways.

- Providing additional amenities such as improved lighting, signage, street furniture, landscaping, etc. in public right-of-ways to support and encourage pedestrian activity.

- Bicycle racks, lockers or other bicycle friendly facilities should be provided throughout the each area. Bicycle usage in each area should be monitored and the number of bicycle parking spaces should be adjusted to meet prevailing demands. A starting point for determining bicycle parking needs could be applying current city codes to existing developments.

- Consider instituting pay parking for all visitors and employees to improve the utilization and turnover of existing parking supplies, encourage the use of alternative modes of transportation, and generate funds that can be used to improve parking resources, streetscapes, transportation options, construct future parking facilities, etc.

- Developing, managing, and operating parking as an essential civic infrastructure and reducing overall parking ratios over time to create a "Park Once" environment. This issue can be supported by:

  - The usage of in-lieu parking assessments for developments planned in the downtown to support the future funding of strategically located parking resources.

  - Encouraging the "Park-Once" strategy through shared parking for both public and private parking resources.

  - Ensuring all public parking resources are efficiently and effectively designed and managed. Encourage efficient design and management in private parking resources as well.

  - Maximizing on-street parking throughout the community and monitoring vehicle duration and turnover. Encourage turnover of this critical parking resource through monitoring, communication with area business owners, as well as through other means such as parking enforcement, pay parking in the future, etc.

  - Clearly designating long-term parking facilities in each area and locating short-term parking throughout the community. Ensure the proper mix of parking through periodic parking occupancy counts and duration/turnover surveys.

- Incorporating ground floor commercial activity into future parking facility designs (where appropriate) when a parking structure is developed in the future.

- Where necessary, improving existing surface parking lots in each area (e.g. paving, landscaping, lighting, identification signage, etc.)

- Modifying the identity of the each area to make it more understandable and attractive to infrequent users. This element is supported by:

  - Actively promoting attractions and commercial developments, including parking availability/locations and alternative transportation options. This can be done using printed materials, as well as the city website.

  - Developing and implementing an informational and directional (wayfinding) signage program with a special emphasis on available parking resources.

5.0 PARKING MANAGEMENT ACTION PLAN

Currently, a significant amount of underutilized parking exists in the BID and Campus Periphery Study Areas – if existing supplies can be used efficiently. Parking in Sub-Area D and in the neighborhoods adjacent to OSU can be challenging and will require substantial improvements in the near-term. While known future developments and population changes should not cause overall parking deficits in the primary study areas through 2020, they will increase the need to improve overall parking management.

With these issues in mind, ***Carl Walker*** recommends the following short-term and long-term strategies (in order of priority). These improvements would initially be the responsibility of the city (with assistance from a parking advisory committee), but could become more community driven in the future.

5.01. Recommended Short-Term Improvements (Next 1 to 2 Years)

Recommended Short-Term Improvements (Next 1 to 2 Years)

1. Develop Mission, Vision, and Guiding Principles for the Public Parking Program (Section 4.01). These statements will provide the framework for future parking management strategies.
    a. Using the preliminary statements included in Section 4.01 of this report as a starting point.
    b. The community should be provided with an opportunity to be involved in the development process.
    c. Once the statements are developed, they should be communicated to community stakeholders.

2. Designate a City Department as Responsible for Parking and Work to Create a Unified System Focused on Defined Areas (Section 4.03). This will help the city manage parking as a system, improve coordination of parking management needs, and provide the community with a single parking contact.
    a. Create a volunteer Parking Advisory Committee to assist with parking planning and strategy development.
    b. Define the boundaries of each parking management area/zone.
    c. All parking-related functions (e.g., parking management, enforcement, planning, and operations) should be combined into a single managing department.
    d. Begin discussions about how public parking will be funded.

Recommended Short-Term Improvements (Next 1 to 2 Years)

3. Improve the Management of Parking in Neighborhoods (Section 4.07.3). Some neighborhoods encounter more parking challenges than others; however, these recommendations can make parking in neighborhoods safer, more predictable, and less likely to be used by non-residents.
    d. Determine appropriate residential street dimensions to ensure on-street parking is provided safely and without negatively impeding traffic or emergency/service vehicles.
    e. Base neighborhood parking management on demand. Use existing parking-related ordinances before implementing advanced strategies, such as residential permit programs. This could include creating time-limited zones (no parking between 5:00 a.m. and 5:00 p.m., or 2 hour parking limits) and/or no parking zones.
    f. Develop a residential parking permit ordinance that can be used in the future (if needed). Involve neighborhood residents in the ordinance development process. Use the outline provided in Appendix B as a starting point.
    g. Work with neighborhood schools to minimize the impact of student drop-off and pick-up, as well as school events, on adjacent residents.

4. Improve Parking Conditions in the Greek Neighborhood (Section 4.07.2). Parking demands related to Greek residents and fraternity/sorority events can create significant parking challenges in the areas surrounding the neighborhood. These strategies can help mitigate some of those difficulties.
    a. Improve the utilization of available parking supplies, including existing Greek spaces, available OSU parking, and other nearby underutilized private spaces.
    b. Encourage the use of alternative forms of transportation to reduce parking needs.
    c. Add on-street angled parking spaces wherever feasible. Consider a permit program to regulate use.
    d. Work with fraternities and sororities to add short-term loading zones in strategic locations and provide consistent enforcement.
    e. Work with the neighborhood to manage event parking.

Recommended Short-Term Improvements (Next 1 to 2 Years)

5. Improve Parking-Related Signage and Wayfinding (Section 4.05). While parking is available in each study area, it may be difficult for some visitors to find or identify. Improving signage and wayfinding can help improve the utilization of available parking supplies.
    a. Install directional signage on streets to direct people to available parking (e.g., signage on Main Street to direct people to parking in the BID).
    b. Install signage at the entry of all public parking lots to identify the locations and communicate intended user groups, regulations, and hours of operation.
    c. Ensure signage in both public and private parking locations does not discourage use by authorized people (e.g., tow warning signs that do not denote intended users).
    d. Coordinate signage with other signage and wayfinding efforts to create a uniform wayfinding system.
    e. Use an experienced wayfinding consultant to develop a parking signage and wayfinding system.

6. Improve the Utilization of Available Parking (Sections 4.07.1 and 4.07.4). A significant amount of underutilized parking exists in each primary study area (not including Sub-Area D). Improving the utilization of existing parking will help make more convenient parking available to visitors, reduce the need to dedicate more land to parking, and mitigate future parking demands.
    a. Work to reduce the impact of city and other BID employees on downtown parking. City employees should parking in city lots east of Lowry Street, the City Hall Lot, and the Teubner Structure. Other employees should park off-street or in designated underutilized on-street spaces.
    b. Adjust on-street time limits to improve the utilization and/or availability of parking spaces.
    c. Update city parking regulations (ordinances) to discourage continuous reparking after time limits expire.
    d. Require construction workers to park in designated areas only. Use time limits and enforcement when necessary.
    e. Work with private parking lot owners to encourage the shared use of available parking resources.

Recommended Short-Term Improvements (Next 1 to 2 Years)

7. Improve the Parking Enforcement Program (Section 4.08). The parking enforcement program is the most visible and best defined parking service in the city. Improvements to the enforcement program should improve customer service, program efficiency and accountability, and the availability of visitor parking.
    a. Define program goals and appropriate performance measures.
    b. Upgrade parking enforcement technologies to improve efficiency and accommodate improved strategies.
    c. Increase parking violation fines to $10 for overtime parking, $20 for improper parking, and $30 for hazardous parking.
    d. Extend the timeframe in which citations must be paid before they double, from 2 days to 5 days.
    e. Implement a tiered fine structure to reduce the impact of parking enforcement on visitors and increase penalties on scofflaws.
    f. Develop a 1st level administrative appeals process to make filing appeals easier and reduce court system demands.

8. Ensure Public Parking is Safe and Lighting is Appropriate (Section 4.06). Visitors and area employees should feel safe using public parking. Ensuring public parking is safe will also help mitigate liability concerns.
    a. Adopt minimum lighting standards and conduct a lighting study to ensure designated standards are met.
    b. Ensure pedestrian paths between parking and primary demand generators are safe and well-lighted.

9. Update Parking-Related Zoning Codes (Section 4.02). Updating zoning codes will help ensure sufficient parking is provided in a functional and flexible fashion.
    a. Update parking design standards.
    b. Update requirements and allow flexible parking solutions.
    c. Incorporate accessible parking requirements, and use them to evaluate current accessible parking needs.
    d. Limit the use of public parking to meet development demands.

Recommended Short-Term Improvements (Next 1 to 2 Years)

10. Improve Parking System Marketing and Communications (Section 4.04). The city needs to communicate the availability of parking, market available parking options, and help educate the community concerning parking management strategies.
    a. Work with community stakeholders to determine appropriate methods of communication.
    b. Develop parking maps that include appropriate parking regulations and related information. Maps should be available in printed form as well as online.
    c. Start the process of "branding" the public parking program.
    d. Develop an information packet for new employees that includes parking and transportation information.
    e. Improve the communication of community parking policies to OSU students. Encourage students to park on campus instead of in neighborhoods.

11. Begin Managing Event Parking (Section 4.07.4). Coordinating event parking needs can help minimize negative impacts, improve customer service, and reduce traffic congestion.
    a. Identify event planners and organizers, and discuss parking challenges/needs with them. Develop event calendars to help plan for parking needs.
    b. Use signage to direct people to available parking or discourage parking in inappropriate areas (large events).
    c. For large events provide staff to direct people to available parking and close lots when they are full.

12. Define Loading and Delivery Needs (Section 4.09). Managing loading and delivery needs can help reduce impacts to the parking system.
    a. Meet with community businesses to discuss needs. Then, designate appropriate areas for loading/deliveries.

13. Encourage the Use of Alternative Forms of Transportation (Section 4.10). Reduce parking demands by encouraging the use of other modes of transportation.
    a. Provide adequate pedestrian and bicycle access/facilities.
    b. Market transportation alternatives to the community.

5.02. Recommended Long-Term Improvements (After 2 Years)

Recommended Long-Term Improvements (After 2 Years)

1. Refine Parking Management Strategies to Meet Community Objectives and Utilization Goals (Section 4.07.1). Monitor the results of parking management improvements and adjust as necessary to better meet parking needs.
    a. Adjust parking time limits (or implement pay parking) to achieve desired utilization levels (approximately 85% for on-street and 90% for off-street).
    b. Implement residential permit programs when existing parking policies/regulations fail to achieve desired goals.

2. Add Parking as Needed to Support New Developments and Increasing Parking Demands (Sections 3.04 and 3.05). Using the planning methodology outlined in Section 3.05 and the demand alternatives listed in Section 3.04, develop new parking when needed. First expand/improve existing locations. If additional parking is necessary, add surface if possible. Parking structures should be the final alternative, unless one can be feasible earlier.

3. Investigate Opportunities to Create a Community-Based Management Program (Section 4.03). Using one of the possible organizational models outlined in this report, work to develop a parking program that is directly managed by the community.

4. Develop a Formal Policies and Procedures Manual for the Parking Enforcement Program (Section 4.08). In order to ensure the consistent and fair management and operation of the parking enforcement program, a formal policies and procedures manual should be created. This will also provide the information needed to train new employees and record policy/procedural adjustments.

5. Implement the 1st Level Administrative Appeals Process (Section 4.08). Implement the 1st level administrative appeals process developed prior to Year 2.
    a. People would still have the option to appeal their citations through the court system if they are not satisfied with the first level appeal.
    b. The appeals process should be kept separate from parking enforcement operations.

Recommended Long-Term Improvements (After 2 Years)

6. Develop Strategies for Funding Future Public Parking Needs (Section 4.03). Over time, increased development and changing parking demands will necessitate funding improved parking operations and/or the construction of new parking spaces. Initially, these costs may be funded directly by the city. In the future, there may be a need to develop parking-related revenue streams to fund public parking initiatives.
    a. Using the initial alternatives outlined in Section 4.03 as a starting point, determine preferred methods.
    b. Determine appropriate strategies for financing future public parking facilities.
    c. Institute pay parking when parking demands warrant. When parking occupancies consistently exceed 85% on-street or 90% off-street, pay parking may be needed to encourage desired parking behaviors and increase space turnover.

7. Continue to Improve Parking System Marketing and Communications (Section 4.04). Adjust marketing and communication strategies as needed. Encourage continued public input and participation in public parking.
    a. Work to improve parking program branding.
    b. Develop an annual parking system report to communicate challenges and accomplishments.

8. Conduct Annual Surveys of Parking Supply and Demand (Section 3.05). Using the information contained in this report, as well as the block identification system and count sheets developed for this report, conduct periodic surveys of parking supply and demand. In addition, conduct periodic surveys of parking duration and turnover. This information will help measure system performance and assist in future planning efforts.

9. Refine Special Event Parking Management Strategies (Section 4.07.4). Adjust parking operations and management strategies related to special events to ensure demands are adequately met. Use data collected concerning event parking demands to determine needs and appropriate strategies.

Recommended Long-Term Improvements (After 2 Years)

10. Integrate Improved Transportation Demand Management Strategies (Section 4.10). Update transportation demand management strategies to incorporate improved/new options and strategies. Start focusing on mass transit alternatives, improved carpool coordination, etc.

11. Update and Maintain Parking-Related Signage and Wayfinding (Section 4.05). Refine signage and wayfinding strategies developed in the first two years and adjust as needed. Ensure installed signage is well maintained.

12. Install Emergency Call Boxes in Public Parking Lots (Section 4.06). In order to improve public parking safety/security, consider installing emergency call boxes in public parking lots. These devices would allow parkers to contact city police if needed. After they are installed, they should be periodically tested to ensure they are working properly.

13. Update Parking Program Mission, Vision, and Guiding Principles as Needed (Section 4.01). Update guiding principles as needed to ensure the public parking system is focused on community needs. As with the initial development of these statements, involve the community in any update efforts.

14. Refine Parking-Related Zoning Codes as Needed (Section 3.05). Over time, the improved availability and utilization of alternative modes of transportation, rising fuel prices, increased residential units downtown, etc. will impact parking demands. This could mean that less parking will be needed in the future. Parking-related zoning codes should be reviewed periodically to ensure they support desired development goals.

15. Consider Developing Parking Structure Design Standards (Section 4.02). It is likely that future parking structures will be constructed in Stillwater within the next ten years. To ensure future parking structures support development goals, the city should develop a set of parking structure design standards. These standards would detail desired design elements, including parking geometrics, ramp slopes, height clearances, elevator and stair tower design, etc.

APPENDIX A – PARKING SUPPLY AND DEMAND DATA

On-Street - BID Area			Sample - Occupancy Wednesday 9/19/12									Average	Peak
Block	Block Face	Capacity	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	Occupancy	Occupancy
B 3	South	11	5	11	5	5	2	11	8	4	4	56%	100%
B 3	East	26	2	16	13	7	2	15	13	4	2	32%	62%
B 3	West	8	6	5	5	7	6	3	4	6	7	68%	88%
B 4	North	23	10	16	16	14	7	21	20	14	12	63%	91%
B 4	South	4	0	0	2	2	1	1	1	0	0	19%	50%
B 4	East	24	2	4	0	4	3	11	14	16	15	32%	67%
B 4	West	6	4	4	4	4	4	4	4	4	3	65%	67%
B 5	North	21	6	11	12	12	10	12	12	11	10	51%	57%
B 5	South	16	3	4	4	3	3	5	5	3	6	25%	38%
B 5	East	19	3	12	13	14	14	17	16	13	12	67%	89%
B 5	West	22	4	3	4	2	0	4	5	4	0	13%	23%
B 6	North	26	8	8	9	13	4	8	10	7	9	32%	50%
B 6	South	4	0	0	0	0	0	0	0	0	1	3%	25%
B 6	East	4	2	4	2	2	2	1	3	2	2	56%	100%
B 6	West	7	0	0	0	0	0	0	0	0	0	0%	0%
B 14	North	16	6	5	9	7	9	2	2	5	4	34%	56%
B 14	South	16	2	4	7	8	10	9	9	6	6	42%	63%
B 14	East	19	8	15	12	9	11	4	6	17	9	53%	89%
B 14	West	11	5	9	9	7	9	8	9	9	9	75%	82%
B 15	North	7	1	1	3	0	7	4	2	2	3	37%	100%
B 15	South	19	11	12	9	4	10	3	3	5	7	37%	63%
B 15	East	17	5	5	5	3	11	8	13	12	12	48%	76%
B 15	West	11	4	6	9	5	7	11	11	12	11	77%	109%
B 16	North	20	6	11	14	13	9	14	17	14	17	64%	85%
B 16	South	14	0	3	2	5	11	5	4	5	9	35%	79%
B 16	East	18	1	2	4	7	17	16	15	16	15	57%	94%
B 16	West	17	4	6	9	5	7	12	13	17	15	58%	100%
B 17	South	20	7	8	12	10	8	13	12	13	17	56%	85%
B 17	East	17	3	3	4	5	7	2	2	7	7	26%	41%
B 17	West	15	3	4	3	5	3	5	6	3	5	27%	40%
B 22	South	7	2	3	2	3	5	7	2	1	3	44%	100%
B 22	East	15	11	12	13	14	15	12	13	9	16	85%	107%
B 22	West	13	0	5	3	1	5	7	4	4	4	28%	54%
B 23	North	15	4	4	7	3	11	10	7	5	5	41%	73%
B 23	South	15	7	11	13	11	12	12	10	9	12	72%	87%
B 23	East	25	17	21	22	20	21	21	18	15	18	77%	88%
B 23	West	18	2	3	8	8	10	15	7	10	12	46%	83%
B 24	North	19	4	5	8	9	8	16	13	12	13	51%	84%
B 24	South	18	0	4	9	14	13	12	11	14	7	52%	78%
B 24	East	17	5	10	17	12	18	14	14	15	13	77%	106%
B 24	West	19	2	14	15	5	15	16	15	13	12	63%	84%
B 25	North	13	1	3	8	10	9	5	7	13	10	56%	100%
B 25	South	8	1	4	2	2	2	3	4	3	4	35%	50%
B 25	East	22	7	5	11	12	14	11	11	15	13	50%	68%
B 25	West	19	7	12	10	10	14	11	12	14	14	61%	74%
B 31	North	6	3	5	4	5	4	4	3	4	4	67%	83%
B 31	West	22	5	6	9	10	11	9	9	8	8	38%	50%
B 32	North	13	13	10	11	11	13	12	11	9	8	84%	100%
B 32	West	9	10	11	7	10	6	10	6	10	10	99%	122%
B 33	North	10	4	10	8	9	7	8	9	8	9	80%	100%
B 33	South	10	12	10	9	12	8	10	11	12	8	102%	120%
B 33	West	25	10	13	14	11	6	17	19	7	12	48%	76%
B 34	South	16	11	12	11	11	9	10	8	12	8	64%	75%
B 34	West	23	5	9	8	8	13	11	15	12	9	43%	65%
	TOTALS	**835**	**264**	**394**	**429**	**403**	**443**	**492**	**478**	**465**	**461**	**51%**	**59%**
	Percent Occupancy		32%	47%	51%	48%	53%	59%	57%	56%	55%		

= Occupancies 85% or higher

On-Street - BID Area			Sample - Occupancy Thursday 9/20/12									Average	Peak
Block	Block Face	Capacity	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	Occupancy	Occupancy
B 3	South	11	4	11	7	5	7	11	10	10	11	77%	100%
B 3	East	26	2	27	20	2	4	6	21	22	26	56%	104%
B 3	West	8	3	2	3	2	4	4	4	6	6	47%	75%
B 4	North	23	5	21	21	14	16	15	18	11	10	63%	91%
B 4	South	4	0	1	2	2	1	1	1	1	1	28%	50%
B 4	East	24	2	8	11	3	3	3	12	7	14	29%	58%
B 4	West	6	4	4	4	4	4	3	2	2	4	57%	67%
B 5	North	21	6	11	11	12	8	11	12	11	9	48%	57%
B 5	South	16	1	4	5	4	4	5	5	5	6	27%	38%
B 5	East	19	4	14	16	19	14	16	15	14	11	72%	100%
B 5	West	22	0	0	0	0	0	0	0	0	0	0%	0%
B 6	North	26	6	6	8	7	5	3	7	6	8	24%	31%
B 6	South	4	0	0	0	0	0	0	0	0	0	0%	0%
B 6	East	4	2	3	0	3	0	2	2	3	3	50%	75%
B 6	West	7	0	0	0	0	0	0	0	0	0	0%	0%
B 14	North	16	3	6	6	3	6	4	3	5	0	25%	38%
B 14	South	16	3	7	5	5	9	6	5	5	6	35%	56%
B 14	East	19	9	10	12	13	7	16	9	8	9	54%	84%
B 14	West	11	5	8	11	11	10	11	5	6	9	77%	100%
B 15	North	7	0	1	2	3	7	1	2	1	0	27%	100%
B 15	South	19	3	5	3	5	3	3	3	3	4	19%	26%
B 15	East	17	0	3	5	9	8	9	7	4	10	36%	59%
B 15	West	11	1	7	8	4	6	8	10	8	11	64%	100%
B 16	North	20	11	19	13	10	10	17	13	17	18	71%	95%
B 16	South	14	0	3	3	4	10	5	7	4	3	31%	71%
B 16	East	18	3	5	9	12	14	17	12	7	16	59%	94%
B 16	West	17	1	7	8	4	6	8	10	8	11	41%	65%
B 17	South	20	6	13	10	10	9	11	12	8	17	53%	85%
B 17	East	17	1	3	4	3	3	4	3	5	5	20%	29%
B 17	West	15	6	12	9	5	3	7	7	9	9	50%	80%
B 22	South	7	3	4	2	3	5	3	4	6	1	49%	86%
B 22	East	15	1	2	5	4	3	3	3	2	4	20%	33%
B 22	West	13	3	4	5	4	3	2	5	5	6	32%	46%
B 23	North	15	3	5	4	4	9	9	4	4	9	38%	60%
B 23	South	15	6	7	5	9	8	7	5	8	7	46%	60%
B 23	East	25	24	22	25	24	18	24	23	21	16	88%	100%
B 23	West	18	1	4	10	11	13	10	10	7	12	48%	72%
B 24	North	19	5	6	4	6	5	5	4	4	12	30%	63%
B 24	South	18	4	6	10	16	12	8	14	7	5	51%	89%
B 24	East	17	9	8	13	14	13	13	15	12	16	74%	94%
B 24	West	19	2	3	12	15	11	10	13	11	14	53%	79%
B 25	North	13	3	6	5	6	4	6	10	6	7	45%	77%
B 25	South	8	2	2	3	5	3	2	3	3	2	35%	63%
B 25	East	22	9	9	11	12	12	10	12	13	13	51%	59%
B 25	West	19	14	18	13	14	13	10	10	13	11	68%	95%
B 31	North	6	6	6	6	6	2	2	5	4	7	81%	117%
B 31	West	22	2	5	8	8	7	6	6	7	9	29%	41%
B 32	North	13	13	12	7	10	8	12	13	13	12	85%	100%
B 32	West	9	9	6	10	10	9	5	8	10	8	93%	111%
B 33	North	10	10	11	10	11	8	9	9	9	10	97%	110%
B 33	South	10	10	10	8	10	7	12	10	10	11	98%	120%
B 33	West	25	2	6	10	8	7	1	4	3	5	20%	40%
B 34	South	16	2	5	10	12	3	5	7	10	14	47%	88%
B 34	West	23	3	3	5	9	8	9	5	5	9	27%	39%
	TOTALS	**835**	**237**	**391**	**417**	**409**	**372**	**390**	**419**	**389**	**457**	**46%**	**55%**
	Percent Occupancy		28%	47%	50%	49%	45%	47%	50%	47%	55%		

= Occupancies 85% or higher

Off-Street Parking - BID Area Block & Lot	Description	Capacity	Sample - Occupancy Wednesday 9/19/12 8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	Average Occupancy	Peak Occupancy
B 3 - 1	Courthouse - Police	17	17	11	14	15	5	11	14	15	13	75%	100%
B 3 - 2	Courthouse	27	23	25	25	21	23	25	22	22	21	85%	93%
B 3 - 3	Courthouse - Police	7	6	6	7	6	5	6	6	5	5	83%	100%
B 4 - 1	Church	42	11	15	17	15	10	18	21	21	14	38%	50%
B 4 - 2	Construction Site	0	0	0	0	0	0	0	0	0	0		
B 5 - 1	City Lot	61	14	24	43	47	43	43	42	32	27	57%	77%
B 5 - 2	Unpaved Lot	15	1	1	0	0	0	1	2	1	0	4%	13%
B 6 - 1	Misc. Businesses	45	5	12	7	8	5	6	6	5	8	15%	27%
B 6 - 2	Retail	3	1	2	2	1	2	2	2	2	1	56%	67%
B 14 - 1	Office Supply	24	18	18	19	18	18	17	16	19	18	75%	79%
B 14 - 2	Misc. Businesses	11	5	5	5	6	4	5	4	4	5	43%	55%
B 15 - 1	Bank	54	30	31	35	35	23	26	29	28	26	54%	65%
B 15 - 2	Bank	16	2	4	4	5	5	3	4	4	3	24%	31%
B 15 - 3	Bank	20	4	6	6	6	7	7	7	4	4	28%	35%
B 15 - 4	Bank & Businesses	9	8	9	9	9	5	8	9	9	7	90%	100%
B 16 - 1	Office	19	10	14	14	12	6	17	17	11	10	65%	89%
B 17 - 1	Office	25	4	7	13	11	8	16	16	17	11	46%	68%
B 17 - 2	Office	11	6	6	5	7	5	6	6	5	6	53%	64%
B 17 - 3	Bank	24	10	12	12	9	10	11	10	10	12	44%	50%
B 22 - 1	Private Structure	90	28	45	46	43	35	44	40	46	50	47%	56%
B 23 - 1	City Lot	87	45	63	70	69	71	74	72	62	53	74%	85%
B 25 - 1	Office	28	18	11	12	15	7	12	10	9	7	40%	64%
B 31 - 1	City Lot	22	2	7	10	12	9	8	5	6	7	33%	55%
B 31 - 2	Business	5	0	1	0	2	0	2	2	1	0	18%	40%
B 31 - 3	Business	5	3	4	3	4	5	5	3	2	4	73%	100%
B 32 - 1	Post Office	37	5	22	16	12	10	12	12	8	9	32%	59%
B 33 - 1	City Vehicles	58	46	40	42	45	49	47	50	49	49	80%	86%
B 34 - 1	Retail	35	0	2	4	7	5	6	3	3	2	10%	20%
TOTALS		**797**	**322**	**403**	**440**	**440**	**375**	**438**	**430**	**400**	**372**	**50%**	**55%**
Percent Occupancy			40%	51%	55%	55%	47%	55%	54%	50%	47%		

= Occupancies 90% or Higher

Off-Street Parking - BID Area			Sample - Occupancy Thursday 9/20/12									Average	Peak
Block & Lot	Description	Capacity	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	Occupancy	Occupancy
B 3 - 1	Courthouse - Police	17	5	15	14	10	4	10	13	14	11	63%	88%
B 3 - 2	Courthouse	27	24	27	24	25	19	27	26	24	25	91%	100%
B 3 - 3	Courthouse - Police	7	4	6	6	4	4	6	7	6	4	75%	100%
B 4 - 1	Church	42	18	8	6	11	20	19	10	8	9	29%	48%
B 4 - 2	Construction Site	0	0	0	0	0	0	0	0	0	0		
B 5 - 1	City Lot	61	8	19	25	35	37	37	37	32	23	46%	61%
B 5 - 2	Unpaved Lot	15	0	0	0	0	0	0	0	0	0	0%	0%
B 6 - 1	Misc. Businesses	45	7	14	9	7	4	6	7	7	9	17%	31%
B 6 - 2	Retail	3	2	2	2	1	1	1	2	2	3	59%	100%
B 14 - 1	Office Supply	24	20	19	22	21	20	18	20	22	22	85%	92%
B 14 - 2	Misc. Businesses	11	5	5	5	6	4	5	4	4	5	43%	55%
B 15 - 1	Bank	54	25	31	29	25	26	21	27	24	21	47%	57%
B 15 - 2	Bank	16	6	7	5	7	5	4	6	4	4	33%	44%
B 15 - 3	Bank	20	4	6	6	6	5	7	5	7	9	31%	45%
B 15 - 4	Bank & Businesses	9	9	9	9	7	5	8	8	8	7	86%	100%
B 16 - 1	Office	19	5	9	13	11	8	12	13	13	11	56%	68%
B 17 - 1	Office	25	8	9	13	14	10	11	14	13	12	46%	56%
B 17 - 2	Office	11	8	9	7	9	7	10	8	8	6	73%	91%
B 17 - 3	Bank	24	6	12	10	8	7	13	14	11	9	42%	58%
B 22 - 1	Private Structure	90	23	42	42	43	34	37	39	44	38	42%	49%
B 23 - 1	City Lot	87	49	56	58	57	49	55	60	60	55	64%	69%
B 25 - 1	Office	28	12	13	8	6	10	13	8	8	9	35%	46%
B 31 - 1	City Lot	22	14	16	22	19	5	6	5	3	3	47%	100%
B 31 - 2	Business	5	0	1	0	3	0	0	0	0	1	11%	60%
B 31 - 3	Business	5	2	2	2	2	1	1	1	0	0	24%	40%
B 32 - 1	Post Office	37	6	7	11	9	13	12	17	12	15	31%	46%
B 33 - 1	City Vehicles	58	48	44	44	47	39	48	48	48	51	80%	88%
B 34 - 1	Retail	35	2	2	5	4	5	3	6	6	5	12%	17%
	TOTALS	**797**	**320**	**390**	**397**	**397**	**342**	**390**	**405**	**388**	**367**	**47%**	**51%**
	Percent Occupancy		40%	49%	50%	50%	43%	49%	51%	49%	46%		

= Occupancies 90% or Higher

On-Street - Campus Periphery Block	Block Face	Capacity	Sample - Occupancy Wednesday 9/19/12 8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	Average Occupancy	Peak Occupancy
C 5	North	21	15	15	20	20	18	20	17	20	17	86%	95%
C 5	South	6	3	2	2	4	5	5	4	4	5	63%	83%
C 5	East	7	3	3	2	5	6	6	5	4	4	60%	86%
C 6	South	2	0	0	0	1	0	1	0	0	1	17%	50%
C 6	East	9	0	2	1	1	0	0	0	0	0	5%	22%
C 6	West	8	6	6	6	6	6	6	6	6	5	74%	75%
C 7	North	9	2	1	10	9	9	9	9	6	8	78%	111%
C 7	East	12	1	5	10	11	10	9	7	6	7	61%	92%
C 7	West	7	7	8	8	8	8	7	7	5	6	102%	114%
C 8	South	9	7	8	8	9	8	7	7	6	6	81%	100%
C 8	West	6	3	3	4	4	4	4	4	3	4	61%	67%
C 9	South	6	3	4	5	6	6	5	4	4	5	78%	100%
C 9	East	18	16	16	18	18	18	18	16	16	18	95%	100%
C 9	West	31	26	26	28	30	28	27	25	24	26	86%	97%
C 10	East	12	12	12	13	13	13	12	12	10	10	99%	108%
C 10	West	20	12	14	13	16	18	18	15	14	17	76%	90%
C 12	South	6	5	5	5	6	6	6	6	5	6	93%	100%
C 13	South	16	4	7	16	13	16	15	15	14	13	78%	100%
C 13	East	10	1	1	7	2	10	10	4	7	7	54%	100%
C 14	North	14	0	1	2	2	3	4	3	2	4	17%	29%
C 14	South	10	4	7	7	4	4	5	5	5	4	50%	70%
C 14	East	14	2	1	2	2	5	2	1	0	0	12%	36%
C 19	North	12	0	0	0	2	2	0	5	4	1	13%	42%
C 19	South	12	5	8	9	9	9	11	11	11	9	76%	92%
C 19	East	10	6	9	10	7	10	10	9	9	9	88%	100%
C 19	West	16	0	3	3	4	8	1	2	1	2	17%	50%
C 20	South	20	1	1	6	8	16	8	11	5	1	32%	80%
C 20	East	13	10	7	13	13	12	12	11	12	12	87%	100%
C 20	West	20	1	8	7	8	18	16	11	10	12	51%	90%
C 20	Mid Block	21	1	2	2	1	9	10	2	8	9	23%	48%
C 21	North	7	1	0	1	4	7	6	7	6	4	57%	100%
C 21	West	11	5	10	9	11	10	9	8	11	11	85%	100%
TOTALS		**395**	**162**	**195**	**247**	**257**	**302**	**279**	**249**	**238**	**243**	**61%**	**76%**
Percent Occupancy			41%	49%	63%	65%	76%	71%	63%	60%	62%		

= Occupancies 85% or Higher

On-Street - Campus Periphery			Sample - Occupancy Thursday 9/20/12									Average	Peak
Block	Block Face	Capacity	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	Occupancy	Occupancy
C 5	North	21	14	17	19	19	22	20	19	18	18	88%	105%
C 5	South	6	2	2	2	5	5	4	4	4	5	61%	83%
C 5	East	7	0	0	2	2	2	5	6	6	6	46%	86%
C 6	South	2	0	0	1	1	0	1	2	1	1	39%	100%
C 6	East	9	1	3	4	6	7	6	9	9	9	67%	100%
C 6	West	8	8	8	8	8	8	8	8	8	8	100%	100%
C 7	North	9	1	4	5	9	9	9	9	9	8	78%	100%
C 7	East	12	0	3	4	6	7	6	9	9	9	49%	75%
C 7	West	7	3	3	3	3	3	3	3	3	3	43%	43%
C 8	South	9	7	8	9	9	9	9	8	9	9	95%	100%
C 8	West	6	6	6	6	6	6	6	6	6	6	100%	100%
C 9	South	6	4	4	5	5	4	4	4	6	6	78%	100%
C 9	East	18	13	13	12	12	12	13	12	11	12	68%	72%
C 9	West	31	6	9	15	15	13	20	18	15	20	47%	65%
C 10	East	12	12	12	11	11	11	10	11	9	9	89%	100%
C 10	West	20	1	4	5	5	5	6	5	7	8	26%	40%
C 12	South	6	5	5	5	5	5	5	4	4	4	78%	83%
C 13	South	16	13	15	16	15	16	12	16	15	14	92%	100%
C 13	East	10	0	2	6	5	14	10	10	7	9	70%	140%
C 14	South	10	4	5	5	6	5	6	5	4	4	49%	60%
C 14	East	14	0	1	0	1	1	5	0	0	0	6%	36%
C 19	North	12	0	0	1	1	3	1	4	3	2	14%	33%
C 19	South	12	4	12	9	9	12	11	11	10	9	81%	100%
C 19	East	10	4	10	10	10	9	8	9	10	11	90%	110%
C 19	West	16	1	5	7	3	4	5	2	2	1	21%	44%
C 20	South	20	0	1	1	2	8	15	12	6	3	27%	75%
C 20	East	13	9	11	11	13	11	12	8	10	9	80%	100%
C 20	West	20	1	3	5	10	17	9	11	3	9	38%	85%
C 20	Mid Block	21	0	3	0	2	6	9	4	3	6	17%	43%
C 21	North	7	1	1	1	6	5	8	7	5	8	67%	114%
C 21	West	11	5	8	8	10	7	10	12	11	10	82%	109%
TOTALS		**381**	**125**	**178**	**196**	**220**	**246**	**256**	**248**	**223**	**236**	**56%**	**67%**
Percent Occupancy			33%	47%	51%	58%	65%	67%	65%	59%	62%		

= Occupancies 85% or Higher

Off-Street Parking - Campus Periphery			Occupancy Wednesday 9/19/12										Average	Peak
Block & Lot	Description	Capacity	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM		Occupancy	Occupancy
C 5 - 1	Fast Food	45	23	21	30	45	43	40	30	15	16		65%	100%
C 5 - 2	Retail	18	14	13	13	13	13	13	13	14	7		70%	78%
C 5 - 3	Laundry	20	11	12	12	12	12	20	20	22	10		73%	110%
C 6 - 1	Retail	4	0	0	0	1	2	1	1	2	0		19%	50%
C 7 - 1	Business	14	9	14	14	14	14	14	14	13	12		94%	100%
C 9 - 1	Foundation	30	2	2	2	5	2	2	3	5	6		11%	20%
C 10 - 1	Bank	46	7	11	15	17	10	18	15	9	13		28%	39%
C 10 - 2	Misc. Businesses	13	7	9	9	12	13	13	7	6	5		69%	100%
C 12 - 1	OSU - Commuter	318	85	215	279	287	270	249	234	215	155		69%	90%
C 12 - 2	OSU - Permit	137	102	113	122	122	110	124	123	118	109		85%	91%
C 13 - 1	Medical Office	9	2	3	4	4	5	4	6	3	3		42%	67%
C 13 - 2	Employee	17	3	4	4	15	16	15	8	4	4		48%	94%
C 13 - 3	Employee	6	2	3	6	5	5	5	5	5	5		76%	100%
C 14 - 1	Church Permit	92	3	7	17	18	26	24	26	19	13		18%	28%
C 14 - 2	Church	32	3	5	3	2	2	2	3	3	3		9%	16%
C 19 - 1	Vacant Lot	30	7	7	10	12	14	13	13	13	12		37%	47%
C 19 - 2	Church	20	0	0	7	9	10	8	8	8	5		31%	50%
C 19 - 3	Church	32	0	0	8	12	15	15	12	8	8		27%	47%
C 20 - 1	Church	6	0	1	4	4	3	2	2	3	2		39%	67%
C 20 - 2	Fast Food	4	0	1	2	2	2	2	1	3	2		42%	75%
C 21 - 1	Fast Food	29	1	7	9	18	24	30	19	17	18		55%	103%
C 21 - 2	Restaurant	25	17	13	11	15	17	18	15	17	18		63%	72%
C 21 - 3	Retail	7	1	1	4	4	5	3	3	3	3		43%	71%
TOTALS		**954**	**299**	**462**	**585**	**648**	**633**	**635**	**581**	**525**	**429**		**56%**	**68%**
Percent Occupancy			31%	48%	61%	68%	66%	67%	61%	55%	45%			

= Occupancies 90% or Higher

Off-Street Parking - Campus Periphery			Occupancy Thursday 9/20/12										Average	Peak
Block & Lot	Description	Capacity	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM		Occupancy	Occupancy
C 5 - 1	Fast Food	45	9	21	33	33	43	45	35	19	12		62%	100%
C 5 - 2	Retail	18	1	1	1	2	3	3	7	3	2		14%	39%
C 5 - 3	Laundry	20	6	7	5	7	6	11	6	11	12		39%	60%
C 6 - 1	Retail	4	0	0	1	1	0	2	2	0	2		22%	50%
C 7 - 1	Business	14	5	7	10	11	11	11	10	9	9		66%	79%
C 9 - 1	Foundation	30	2	2	2	2	2	2	3	5	5		9%	17%
C 10 - 1	Bank	46	8	8	9	11	15	9	9	8	14		22%	33%
C 10 - 2	Misc. Businesses	13	4	7	10	13	10	11	13	12	6		74%	100%
C 12 - 1	OSU - Commuter	318	58	231	297	285	268	284	288	254	185		75%	93%
C 12 - 2	OSU - Permit	137	95	104	112	105	102	107	107	109	94		76%	82%
C 13 - 1	Medical Office	9	1	2	2	4	4	4	4	4	3		35%	44%
C 13 - 2	Employee	17	3	4	6	15	16	15	8	4	4		49%	94%
C 13 - 3	Employee	6	2	3	5	6	6	5	5	5	5		78%	100%
C 14 - 1	Church Permit	92	3	13	18	23	26	26	25	21	20		21%	28%
C 14 - 2	Church	32	3	3	5	3	3	2	2	2	3		9%	16%
C 19 - 1	Vacant Lot	30	5	10	15	12	16	13	12	9	7		37%	53%
C 19 - 2	Church	20	7	7	7	8	7	6	6	5	5		32%	40%
C 19 - 3	Church	32	0	12	26	27	6	2	7	6	5		32%	84%
C 20 - 1	Church	6	0	0	4	3	2	2	3	2	3		35%	67%
C 20 - 2	Fast Food	4	0	0	2	3	3	3	3	1	1		44%	75%
C 21 - 1	Fast Food	29	3	5	10	16	27	25	20	12	26		55%	93%
C 21 - 2	Restaurant	25	14	14	16	13	17	17	16	12	14		59%	68%
C 21 - 3	Retail	7	0	2	3	6	6	5	4	5	4		56%	86%
	TOTALS	**954**	**229**	**463**	**599**	**609**	**599**	**610**	**595**	**518**	**441**		**54%**	**64%**
	Percent Occupancy		24%	49%	63%	64%	63%	64%	62%	54%	46%			

= Occupancies 90% or Higher

APPENDIX B – RESIDENTIAL PARKING PERMIT PROGRAM OUTLINE

After determining appropriate on-street parking location criteria for neighborhoods, the city should develop and approve an ordinance that provides the authority to create residential parking districts. The ordinance would include (but not be limited to):

- Definitions of key terms;
- Processes and requirements to create, adjust, or dissolve residential parking districts;
- Resident approval requirements;
- Issuance guidelines for residential permits;
- Visitor parking permit types and issuance;
- Residential parking district limitations;
- Parking permit policies and fees; and,
- Parking enforcement and penalties.

The structure of the residential parking district ordinance must strive to meet the needs of each neighborhood, including (but not limited to):

- Existing ordinances should be properly implemented and enforced prior to forming a parking district, including creating no parking areas or time of day restrictions as needed;
- District designation, set-up, and on-going management must include input and feedback from residents;
- Parking management must be flexible enough to meet the needs of each neighborhood or subsections of each neighborhood;
- Parking policies and procedures must minimize burdens on residents;
- Parking regulations must include appropriate accommodations for residential visitor parking demands;
- Policies should be focused on meeting the needs of all residents (e.g., home owners and renters), not just property owners;
- Parking district fees should be consistent with costs to implement and manage the district.

With these issues in mind, the following preliminary outline for the creation of a residential parking district ordinance is provided as a starting point for further discussion. The basic structure of the ordinance would include:

1. **Definitions of Key Terms** – The definition of terms such as "Resident", "Nonresident", and "Visitor" will help foster a common understanding of the ordinance's policies and regulations.

2. **Authority to Create Residential Parking Districts** – The ordinance must provide the city council with the authority to create residential parking districts when on-street parking conditions warrant. Factors that the city council would take into account include (but are not limited to):

    a. Resident needs, concerns, and desires;

    b. On-street parking occupancy levels;

    c. Extent of resident versus nonresident parking occupancy levels;

    d. Lack of other alternatives to address negative parking conditions;

    e. Impact of a residential parking district on surrounding areas; and,

    f. Financial feasibility of creating and operating a residential parking district.

3. **Process to Create a Residential Parking District** – The ordinance should provide a clearly defined process to create a residential parking district. The process to create a residential parking district should include (but not be limited to):

    a. Processes for either residents or the city council to initiate the creation of residential parking districts**.** The *resident-initiated process* should require evidence that a significant portion of the residents 18 years of age or older want a parking district (e.g., 66% of residents). The *city council initiated process* would require a finding from city staff that a residential parking district is needed to address significant on-street parking issues/concerns. The city council initiated process should provide residents with a way to terminate the process if a certain percentage of residents do not want a residential parking district in their neighborhood (e.g., 34% of residents).

    b. Minimum area/zone sizes should be defined. The formation of residential parking districts should be focused on the areas/zones where problems occur, but must also be large enough to effectively enforce and manage. The ordinance should define a minimum area/zone size for the creation of a parking district (e.g., six contiguous block faces). In addition, the previously defined on-street parking location criteria should be used to determine where parking can be located and how many parking spaces are available in the area/zone.

    c. The process should require occupancy data to determine appropriate regulations. Parking occupancy data should be collected to determine the extent of the parking problem(s) and the time periods of significant parking concerns. This information would help better define parking challenges and potential management strategies (e.g., instituting time restrictions or no parking areas versus implementing parking permit requirements). Whenever possible, the priority should be to first use non-permit management strategies before requiring parking permits (unless directed otherwise by a significant percentage of residents). If the parking

occupancy data collected demonstrates the need for enhanced parking management strategies (e.g., typical parking occupancy levels greater than 75% to 85%), the process would move forward.

d. Sufficient opportunities for input and feedback should be provided to residents and other interested parties. Additional process steps would include public hearings and mailed notices to clearly determine community needs/concerns, district boundaries, and appropriate management strategies. The creation of a residential parking district would be approved by the city council. These steps would also be used to remove a residential parking district or change the size of an existing district.

4. **Issuance of Parking Permits (if any)** – If the management strategies for the district include parking permits, permits should be issued by the city (or another designated parking management organization). The city should be required to verify that each permit issued meets the requirements set for the district. Permits should first be issued to residents, and valid proof of residency should be required. Resident parking permits should be valid for a set amount of time (e.g., one year). If space warrants, the community approves, and the city council authorizes, parking permits could also be sold to nonresidents. Vehicles with outstanding parking tickets should not be issued parking permits until the citations are fully paid. The number of permits available could be limited to the estimated amount of on-street parking spaces available.

5. **Accommodation of Visitor Parking** – Ideally, each home in the residential parking district should be provided with one or two visitor parking permits that they control (if parking permits are required). The visitor parking permits would be issued at no additional cost to residents. The visitor parking permits would be issued by the resident to visitors, service providers, etc. as needed. The parking permits would provide temporary on-street parking privileges for a set amount of time (e.g., up to four hours or for no more than 48 hours).

   For larger events (e.g., parties, weddings, and meetings), residents would be able to acquire temporary parking passes from the city when/if needed. There would be a maximum number of temporary passes that a residence could use at any one time (e.g., 10 passes), and the number of temporary passes available each year to an individual residence would be limited (e.g., no more than 50 passes within a twelve-month period). The passes could be available at a designated city office, by phone or mail, or could be acquired via the Internet. There may or may not be an additional fee for temporary passes.

6. **Limitations should be Clearly Defined** – The ordinance should include any limitation of the district. This would include the enforcement of all other parking regulations (continued enforcement of safety zones, fire lanes, fire hydrant areas, etc.). In

addition, certain on-street parking restrictions may be needed to facilitate the cleaning of streets and/or the periodic removal of snow. Finally, it must be clear that the implementation of a residential parking permit program would not guarantee or reserve any specific parking spaces for specific residents (e.g., a resident parking right outside their own home).

7. **Parking Permit Fees and Revenue Uses (if any)** – The ordinance should define how the parking permit fees will be determined, but should not define an actual fee. The fee would likely change over time as expenses change. Any revenue generated by the parking district should be used to cover the cost of operating the district (purchasing permits/materials, issuing permits, providing enforcement, etc.). Any funds left over after covering district expenses should be held in reserve to fund parking-related maintenance projects (e.g., replacing signage, painting curbs, and repainting pavement markings). The goal should be for the program to operate at roughly breakeven.

8. **Parking Violations and Penalties** – The ordinance should define the penalties for parking violations related to the parking district. Penalties could include monetary fines, the revocation of parking privileges, and the possibility of vehicle immobilization or impoundment. This should include (but would not be limited to):
    a. Improper acquisition of parking permits and passes;
    b. Improper parking permit or pass usage;
    c. Copying or counterfeiting parking permits or passes;
    d. Using a revoked parking permit or pass; and,
    e. Using a parking permit or pass reported lost or stolen.

9. **Revocation of Parking Permits/Passes** – In instances of significant abuse or when residents move out of the district, the city should be authorized to revoke a parking permit or pass.

APPENDIX C – PARKING TECHNOLOGY ALTERNATIVES

The concept of pay parking will be an important component in the future management of parking in Stillwater (specifically the BID and the Campus Periphery areas). In order to generate the funds necessary to effectively plan, manage, and operate the downtown parking system in the future, sufficient revenues will need to be generated through some combination of in-lieu fees, special assessments, and/or pay parking. Instituting pay parking in the downtown parking district will also help improve parking turnover and encourage the use of other modes of transportation. Therefore, most of the parking technologies included in this appendix are geared toward pay parking alternatives.

The following technologies are used across the county by municipal parking systems and can be successful depending on the specific operating requirements of the environment. Typical methods of operation are described in the following sub-sections, along with pros and cons relevant to potential Stillwater parking needs.

Off-Street Parking Facilities

Most off-street parking technologies provide options for collecting and auditing revenues, tracking facility utilization data, and operating control equipment. An additional feature that many of these systems can incorporate are variable message signs that can be used to direct patrons to available parking supplies, or even available supplies within individual parking facilities. These signs would be controlled using a comprehensive parking management system, and could display parking space counts, lot closed/open text, and/or other directional information.

The technologies discussed in this section would be most applicable to a future public parking structure. The existing surface parking lots would most likely incorporate another technology (e.g., pay-and-display, pay-by-space, pay by cell phone – further described in the on-street section of this appendix) to collect parking fees, but could use an access card technology for any designated permit parking areas.

The following technologies are used in larger off-street parking lots and parking structures:

Traditional Exit Cashiering

For cashiered exit lanes, a fee computer would be employed to compute parking fees and track transactions. A parking fee computer is a standard point of sale terminal that includes a ticket validator and printer. When a patron enters the parking facility, they would take a ticket from a ticket dispenser. The central computer system would then record the ticket number of the ticket issued for processing at exit (usually using a bar-code), or the data would be stored on the ticket's magnetic stripe. When the

patron was ready to exit, they would first present their ticket to the cashier. The cashier would insert or swipe the ticket through a reader/verifier, at which point the system would compute the parking fee. The cashier would then collect the fee from the patron and the exit gate would open after the fee is collected.

These systems typically cost approximately $45,000 to $55,000 per set of entry and exit lanes, depending on the options selected (not including shipping, handling, and conduit needs). A cost of a centralized control system, including a control computer and necessary software, may depend on the number of devices connected to the system or the services included with the software. The cost of a centralized management system could be approximately $20,000 to $40,000, plus the cost to install necessary communications and power conduit to each parking lane device.

Advantages to traditional exit cashiering include:

- Familiar to most parkers.
- Human response to problems and equipment malfunctions.
- Person to answer questions and provide directions.
- Can provide a higher level of customer service.
- Typically lower initial equipment costs.
- Flexibility in dealing with special parking needs or other situations that may arise.
- Customers would be able to park as long as they like, without having to make another payment to a parking meter or similar device.
- Less parking enforcement would be required.

Disadvantages could include:

- Increased labor costs.
- Increased supervision required.
- Increased management and administrative costs.

Central Cashiering

The same type of equipment used for exit cashiering could be configured in a central cashier format. In this situation, instead of paying a cashier at exit, customers would pay at a central cashier point before walking to their vehicles. For this to work, parkers must keep their parking tickets with them so they will have them to pay at exit. This setup works similarly to a pay-on-foot machine setup, described later. At exit, the customer would insert their paid ticket into an exit verifier machine that would confirm the fee has been properly paid. If the fee has not been paid, the customer would either be asked to pay at the central cashier or could be asked to insert a credit card for payment.

The cost of implementing this method of operation would be similar to the traditional exit cashiering option, although additional equipment would be necessary. The cost of providing exit verifiers in each lane would be $15,000 to $20,000 per exit verifier (plus shipping, handling and installation).

Central cashiering advantages include:

- Human response to problems and equipment malfunctions.
- Person to answer questions and provide directions.
- Can provide a higher level of customer service compared to automated equipment.
- Typically lower initial equipment costs than pay-on-foot machines.
- Flexibility in dealing with special parking needs or other situations that may arise.
- Customers would be able to park as long as they like, without having to make another payment to a parking meter or similar device.
- Less parking enforcement would be required.

Disadvantages to central cashiering could include:

- Increased labor costs (over fully automated systems).
- Increased supervision required.
- Increased management and administrative costs.
- No attendant presence on lanes (increased response time to lane equipment malfunctions)
- Requires customers to take tickets with them after they park.
- Additional signage is required to remind customers to take their tickets with them when after they park.

Pay-on-Foot Machines

Pay-on-foot machines can provide the quickest parker exit times, as payment is taken away from the exit lanes. This equipment allows patrons to pay for parking before they get to their vehicles and enter an exit lane. Patrons would take a parking ticket from a ticket dispenser as they enter the facility. Then, they would take the ticket with them, instead of leaving it in their vehicle. When they are ready to leave, they must first insert their parking ticket into an automated pay machine. The machine(s) would be located in the facility, adjacent to pedestrian entrances (e.g. stair entry points, elevator lobbies, etc.) The machine would compute the parking fee, collect payment from the parker, and then return the ticket to the parker. The parker will then have a set amount of time to exit the parking facility before additional parking fees are assessed. At exit, the parker simply inserts their parking ticket into an exit verifier and they leave the facility. The exit verifier could also be configured to accept credit cards if the patron fails to pay at the pay-on-foot machine.

This equipment costs approximately $50,000 to $80,000 per machine, depending on the equipment options selected (not including the cost for a centralized system

management, exit verifiers, other equipment, or installation). Also, additional signage is required to alert parkers to take their tickets with them. An escape lane may be required at exit for those that forget to pay for their parking at the pay-on-foot machine. The escape lane would permit the vehicles to repark, without exiting the facility.

Advantages to pay-on-foot machines include:

- Reduced labor costs.
- Flexible payment options.
- 24-hour automated cashiering capability.
- Flexible parking fee programming.
- Faster vehicle exit times.
- As fee collection would be controlled by the system, cashier mistakes/theft less likely.
- Customers would be able to park as long as they like, without having to make another payment at a meter or similar device.

Disadvantages of pay-on-foot could include:

- Can be more difficult for customers to use. The implementation of pay-on-foot would require a significant customer education effort.
- Equipment is more expensive.
- Customers may forget to take their parking tickets with them, or lose their tickets.
- May require the creation of escape lanes at the exit of each facility, to provide a means for customers to clear exit lanes if they failed to pay their fee at the pay-on-foot station.
- If a machine fails, patrons could be severely inconvenienced.
- Lack of a direct human response to questions or concerns. This disadvantage could be reduced through the use of roaming "parking ambassadors"; however, labor expense savings would be reduced.
- Additional signage is required to remind customers to take their tickets with them when after they park.

Pay-in-Lane Machines

Pay-in-lane machines can allow for the collection of parking fees without a cashier being present. The machine is placed in an exit lane, and would collect the parking fee from the parker directly. An exiting parker would insert their parking ticket into the machine, and the machine would compute the parking fee and collect the payment. While this equipment reduces the need for cashiers (saving payroll expenses), it increases parker exit times as each transaction takes longer to process.

This equipment costs approximately $30,000 to $50,000 per machine, depending on the equipment options selected (not including the cost for a centralized system management, exit verifiers, other equipment, or installation). While this equipment

reduces the need for cashiers (saving payroll expenses), it increases parker exit times as each transaction takes longer to process.

Advantages to pay-in-lane machines include:

- Reduced labor costs.
- Flexible payment options.
- 24-hour automated exit lane coverage.
- Flexible parking fee programming.
- As fee collection would be controlled by the system, cashier mistakes/theft is less likely.
- Customers would be able to park as long as they like, without having to make another payment at a meter or similar device.
- As payment is made at exit, there is no worry of customers forgetting to pay their fee at a central point before exiting.

Pay-in-lane disadvantages could include:

- Can substantially increase exit times. This can be a significant concern during periods of high exiting traffic.
- More difficult for customers to use. The implementation of pay-in-lane would require a significant customer education effort.
- Equipment is more expensive.
- If a machine fails, customers could be stuck in exit lanes.
- Similar to the pay-on-foot option, there is a lack of direct human responses to concerns. This disadvantage could be reduced by using roaming "parking ambassadors"; however, labor savings would be reduced.

Credit Card In and Out

Credit card in – credit card out equipment allows parkers to use a credit card to enter a parking facility, and then use the same card at exit to pay for their parking fees. For example, at the facility entrance a parker would insert their credit card into a reader. The reader would record the credit card number for vehicle duration tracking. This system would not require the parker to pull a ticket from a ticket dispenser. Then, when the parker is ready to leave, they would insert the same credit card into a reader at exit. The credit card number would be retrieved from the system to determine how long the vehicle was parked, and the appropriate fee would be charged to the credit card. The system could also be configured to accept credit cards are exit only, using a parking ticket pulled by the customer at entry. This equipment is most popular in airport environments; however, they could provide an auxiliary solution for municipal operations as well.

The credit card payment could be batched for nightly processing, or it could be processed while the vehicle is in the exit lane. Batched processing provides a

quicker exit, although a small percentage of cards may be declined later. Batch processing can also lead to greater fees charged by the bank, as more risk is involved with processing credit cards after the sale has been completed.

This equipment costs approximately $70,000 per entry lane/exit lane configuration (not including the cost for centralized system management, other equipment, or installation).

Credit card in – credit card out advantages include:

- Reduced labor costs.
- 24-hour automated cashiering capability.
- Flexible parking fee programming.
- Faster vehicle exit times.
- As fee collection would be controlled by the system, cashier mistakes/theft is less likely.
- Using the option of accepting credit cards at exit could help augment traditional exit cashiering.
- Customers would be able to park as long as they like, without having to make another payment at a meter or similar device.

Disadvantages could include:

- A full card in and card out system would require parkers to use the same card at entry and exit. This can cause some confusion if the customer uses multiple credit/debit cards.
- The equipment can be more expensive in some cases.
- If a machine fails, patrons could be severely inconvenienced and stuck in an exit lane.
- If card processing is batched, some cards will be declined after customers have gone.
- This system cannot completely replace cash payment.
- Would require an escape lane and alternative payment strategy for patrons unable to use the equipment.
- Similar to the previous two options, there is a lack of direct human responses to questions or concerns. This disadvantage could be reduced through the use of roaming "parking ambassadors"; however, labor expense savings would be reduced.

Access Card Technology

Access cards are used by monthly parking customers to gain access to the parking facility. There are several access card technologies typically utilized by municipalities. Typical access card technologies would include bar-code, magnetic stripe, proximity card, and automatic vehicle identification (AVI) tags.

The first two alternatives (bar-code and magnetic stripe) function in a similar fashion relative to the parking customer. The customer pulls into an entry/exit lane and swipes their access card through a card reader. The reader then reads the

bar-code or magnetic stripe and determines if the card is valid. Both card technologies can provide both general card access and parking debit card capabilities. A significant advantage to these technologies is that they can provide an extra level of flexibility in providing low cost parking management options. For example, each system could allow for preprinted paper parking passes for special events, valet parking, special parking passes, etc. Some disadvantages to these technologies are that they require a card swipe at the reader, bar-code cards can be duplicated, the action of swiping a card can wear readers and dirty reading surfaces, and they can take longer to process at entry/exit points.

Another technology is based on proximity access cards. This technology requires parking patrons to present their parking access cards to a card reader, but not swipe them through the reader. Once a card is presented to a reader, the system will determine the validity of the card. Like the first two technologies, proximity cards can provide standard parking access and parking debit cards.

The final access card technology is AVI (Automatic Vehicle Identification), and uses radio frequency identification tags. As the monthly parker approaches the entry/exit lane, the AVI reader sends a signal that detects the tag (typically placed on the lower driver-side portion of the vehicle windshield), with the tag responding with the necessary identifying information. The system then determines the validity of the tag and performs the necessary functions (e.g., open entry/exit gates). The main advantages of AVI technology are increased entry/exit throughput and better customer service (e.g. customers don't have to roll down their windows and present a card, faster entry/exit, etc.) However, the installation of an AVI system can be more costly than the other access card technologies, and the cost of access tags can be higher.

The costs of implementing these systems range from $2,000 to $5,000 per card reader and $2.00 (bar-code and magnetic stripe cards) to $20.00 (high-end AVI tags) per access card/tag.

On-Street Parking Spaces

On-street parking technologies will generally provide assistance in two areas: enforcing posted parking time-limits and collecting parking fees. While the institution of pay parking will be an integral part of future parking management in Stillwater, not all on-street parking spaces will have a level of utilization in the foreseeable future that would justify an investment in pay parking equipment. Therefore, some on-street spaces could be recommended for pay parking in the future (e.g., in core areas or spaces with high levels of utilization), while other on-street spaces would utilize time-limits.

Time Limit Enforcement Technology

Parking time limits can be a useful tool for encouraging turnover. While state-of-the-art parking management principals suggest using duration-sensitive pricing instead of time limits (e.g., the first hour is $0.50, the second hour is $1.00, and the third hour is $2.00), it is likely that time-limited parking will remain in Stillwater for the

foreseeable future. Time limits have traditionally been enforced by one of two methods: tire chalking and license plate inventories. New technologies, including Mobile License Plate Recognition and wireless parking sensors, can dramatically increase parking enforcement efficiency.

To compare various parking technologies, they are generally measured against their potential "enforcement efficiency". This is a measure of the average amount of time spent by a Parking Enforcement Officer (PEO) to identify a parking time limit violator. Higher efficiencies can result in either more citations being issued by the same number of PEO hours, or the same number of citations being issued in fewer PEO hours.

Traditional Time Limit Enforcement Methods

With tire chalking, PEOs pass by parked vehicles and mark their tires using a piece of chalk on the end of a metal rod. PEOs then return to the area after the posted time limit has elapsed and check for tire marks – if they are present, the parked vehicles are assumed to have not moved and are issued citations

With license plate inventories, PEOs pass through the area and record license plate numbers on paper or in a handheld computer. Again, once the time limit has elapsed, the PEO returns and checks for the presence of vehicles with the same license plates – if they are present, they are assumed to have not moved and are issued citations.

Both of these "low-tech" methods have a number of problems, though they also have some benefits. Problems include:

- Vehicles citied may not in fact be in violation – tire chalk can remain on tires after a short drive (a block or two) and a vehicle that has moved a few spaces may be in compliance with the law, but found to be in violation by either method.

- Both methods fundamentally require two or more "passes" – the first to mark or record occupying vehicles, and the second to check for their continued presence. This means that the first citation of each day cannot be issued until at least the minimum time limit period has passed since the start of the PEO's shift – and if all spaces use two-hour limits, that means at least a quarter of each PEO's typical shift is spent not issuing citations.

- Tire chalking is subject to driver "interference" – if a driver notices a chalk mark on their car's tire, they can simply rub it off to "reset" their time of occupancy and avoid getting a citation on the next pass by the PEO.

- Tire chalking is difficult in diagonal and parallel parking spaces due to the extra distance from the PEO location to the marked tire – generally PEOs must move on foot, instead of in a vehicle, when marking non-parallel parked cars, which significantly decreases enforcement efficiency.

- Tire chalking and license plate inventories put PEOs at risk of Repetitive Strain Injuries (RSI) and other workplace hazards. Reaching out the door of a moving vehicle to chalk tires or repeatedly keying plate numbers into a handheld device have the potential to cause workplace injuries and the resultant insurance claims, increased insurance rates, and lost productivity.

Possible benefits of tire chalking or license plate inventories can include:

- Both methods are relatively inexpensive to implement and are very flexible to accommodate changing parking rules.
- Both methods are well understood and accepted by the courts and the public.
- Parking enforcement officers are more available to the downtown community and more aware of their surroundings.

New Time Limit Parking Enforcement Technologies

A couple of technologies to improve time limit enforcement efficiency have recently become available. These include Mobile License Plate Recognition (MLPR) and Wireless Parking Sensors (WPS). Both technologies are more expensive to implement that the "low-tech" methods discussed above, but both offer dramatic efficiency increases that can easily pay for the extra implementation expenses.

An MLPR system is essentially a semi-automated, vehicle-mounted version of the license plate inventory approach previously discussed. Instead of manually entering license plate numbers, the MLPR system uses cameras, computers, and a GPS receiver to quickly read the license plate of each parked car that is passed by the MLPR vehicle and note the location of that plate number. Then, when the PEO drives past the same area on a subsequent pass, the plate numbers and locations are again read and compared to the previously recorded data. If the same plate is seen in the same location, the PEO is alerted and a citation may be issued.

Numerous variations of MLPR systems exist: some identify cars by color, shape, and size, others record plate numbers for issuance of citations by mail instead of by the PEO, and others are handheld instead of vehicle-mounted. All MLPR systems share the same problems and benefits. Problems include:

- MLPR systems are expensive. Vehicle-mounted systems start at about $50,000, without the vehicle, and go up to over $100,000 including the vehicle. Handheld systems start at about $10,000 for the first handheld, and at least $5,000 for each additional handheld.

- MLPR systems may not catch as many violators as manual license plate inventories. Testing of a leading vendor's vehicle-mounted MLPR system found that only about 90% to 95% of plates were recognized correctly on each pass. In subsequent passes, the unrecognized plates varied, requiring some operator input to correct misreads and to identify time limit violators. Plate recognition can be especially poor on older and weathered license plates.

- Vehicle-mounted MLPR systems are generally set-up for either parallel or diagonal/perpendicular parking, but not both. To accommodate all types of parking, additional costs are incurred for extra cameras and mountings, and enforcement efficiency may decrease as PEOs switch the system between parked car types.

- MLPR systems still require two or more passes to identify time limit violators, like tire chalking and manual license plate inventories. This has the same problem discussed above of making the first hour or two of each day's PEO time un-productive in terms of citation issuance.

- Parking enforcement officers may spend more time in vehicles, and will be perceived to be less available for visitor questions, etc.

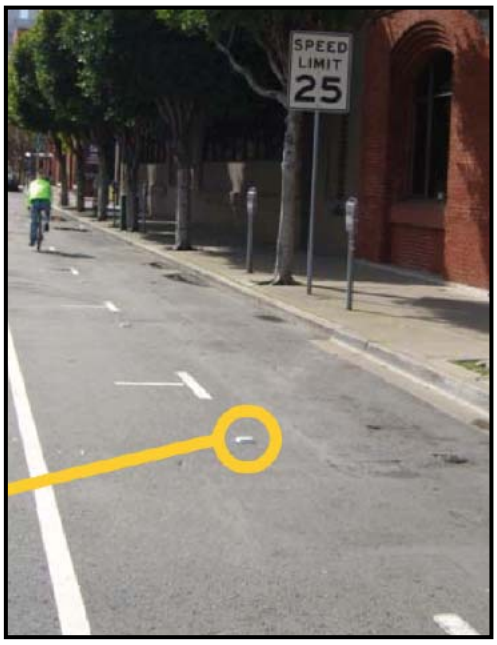
However, MLPR benefits can include:

- Despite the "multi-pass" problem noted above, MLPR systems can offer significant increases in PEO efficiency. Vehicle-mounted systems can be driven at up to 25 M.P.H. while recording plates, allowing a PEO to patrol a larger area. However, if the MLPR vehicle is constantly stopping to issue citations, the enforcement efficiency will increase only somewhat over manual methods.

- MLPR systems can be loaded with various license plate databases, including parking ticket scofflaws and stolen vehicles. When a plate in the databases is identified, the PEO is alerted and appropriate action may be taken.

Wireless Parking Sensors (WPS) are the very latest in parking time limit enforcement technology. As such, they offer the greatest potential parking enforcement efficiency gains, but they also have the shortest history of use by parking systems. Unlike all of the other parking enforcement technologies presented herein, they also have significant benefits for parking management outside of enforcement, which makes them beneficial to more stakeholders and may reduce their effective cost.

WPS systems include sensors, receivers, enforcement interfaces, and reporting interfaces. Sensors are small, simple electronic devices that are installed within each parking space. They are either permanently adhered to the pavement surface, or they are installed in a small hole drilled into the pavement. Each sensor includes a detector (typically magnetic), a battery (typically lasting 4-6 years), and a radio to communicate parking events. Sensors detect when vehicles enter and exit each parking space – they don't identify the vehicles, but they do identify the spaces and the time of events. Sensors may also include memory to store parking events when no wireless communications are available.



Receivers are either permanently installed on light poles and other elevated positions around the sensors, or are integrated into enforcement devices – regardless, the receivers collect the parking event data from the sensors and relay it to a database server on the internet.

The enforcement interface is a dedicated handheld device, or an interface on a general-purpose handheld (like a mobile phone or a parking enforcement handheld) that allows PEOs to quickly identify which vehicles are violating parking regulations.

The reporting interface is typically a secure web page that allows parking managers, and even city residents, to view aggregated parking behavior data, regardless of violations. This last point is important – unlike all the other parking enforcement technology described in this report, WPS systems collect parking behavior data for every parking event, not just for violations – this means that the WPS system is useful for making decisions on parking rules, requirements, and other management decisions that might be made by planners, traffic engineers, economic development staff, even local chambers of commerce and merchants.

WPS systems, like all of the technologies previously described, have problems and benefits. Problems include:

- Wireless parking sensors must be installed in each individual parking space. This means that if the number of spaces monitored is to double, the sensor costs will roughly double. With other technologies, expansion to cover additional areas may occur at little or no incremental cost beyond additional PEO time.

- WPS systems typically require delineated spaces for accurate enforcement. While parking behavior can be collected from unmarked spaces, issuing citations based on sensor data requires the spaces to be marked. In parking lots this is not an issue, but some on-street spaces are not currently marked.

- WPS systems are a relatively new technology. As such, there are few long-term or widespread deployments to consider when reviewing WPS systems and vendors. Additionally, all new law enforcement technologies must be reviewed and "approved" by a court of law, and in most jurisdictions this review of WPS systems has not yet occurred.

Potential WPS benefits can include:

- Most WPS systems are sold as services – instead of customers buying the hardware and related implementation services, vendors will install and service the systems in return for a subscription fee. This reduces the up-front costs to the city, and greatly reduces the risk exposure due to new technology. If the system fails to perform as promised, the city can simply stop paying the service fees. Many parking technologies are sold as a system, with large upfront payments required - regardless of how well the system actually works in the field.

- In addition to capturing parking violation data, WPS systems capture and report all parking behavior. As noted above, this parking survey information can be very useful to many stakeholders in improving the management of the parking resources.

- In a wirelessly connected WPS, the city may use real-time violation information, available via a web browser, to dispatch PEOs to where they are required. By replacing patrols with directed, optimal dispatch, PEO efficiency can be increased dramatically.

- In all WPS systems, regardless of their real-time data capabilities, highly accurate historical violation reporting can be used to optimize parking enforcement beats, routes, and PEO scheduling. For instance, if historical data shows that violations on the west side of town don't typically start occurring until after 11am, then the PEO responsible for that area could be redeployed early in the morning, or their shift could be rescheduled. These adjustments can result in large enforcement efficiency improvements.

- WPS systems, unlike all of the other time limit enforcement systems previously described, allow "one-pass" time limit enforcement. The first time a PEO passes a given parking space on a given day, they can issue a citation. There is no need to come by earlier in the day to chalk tires or record license plates. This single factor presents the largest opportunity for parking enforcement efficiency improvements.

Pay Parking Technologies

The following technologies are used to collect fees for on-street parking spaces, but can also be used in smaller off-street parking lots:

Traditional Parking Meters

Parking meters are very common, and most customers will find them easy to use. Electronic meters are now available that almost never jam and can alert parking enforcement when overtime parking has occurred. These parking meters are relatively inexpensive and easy to maintain. Also, they can now provide additional customer conveniences such as payment using smartcards and prepaid cash keys. However, they are prone to vandalism and can detract from the aesthetics of the downtown. Also, as they rely on the honor of customers paying them, the installation of parking meters will require sufficient parking enforcement to encourage people to pay to park.

Traditional parking meter advantages include:

- Ease of use.
- Simple setup and management.
- Can be less expensive to purchase and install than multi-space meters, depending on the number of spaces covered (e.g., typically $500 to $750 per meter, depending on options).
- Software is available to improve the auditing of funds and help provide additional utilization data.
- Can accept coins, smart cards, and "meter keys".
- Newer meters can also accept credit/debit cards.
- If one meter malfunctions, all of the other meters will still collect fees.

Disadvantages include:

- Limited to the types of payment accepted.
- Requires coin collection and counting time.
- Less esthetically appealing than other options.
- Requires sufficient parking enforcement.
- Mentally limits customer stays, as they have to either leave or continue feeding a parking meter.

In-Vehicle Parking Meters

An in-vehicle parking meter is a small electronic device that parking customers can purchase or rent from the municipality to use in designated on-street parking spaces. The customer pre-pays for parking, and the time-value is loaded into the in-vehicle meter. When the user parks in a designated area, they turn on the meter and typically hang it from the vehicles rearview mirror. The appropriate amount of time is deducted by the parking meter until the customer returns to their

vehicle and turns the meter off. Parking enforcement officers can see the meter as they patrol the area and determine if the vehicle is parking appropriately.

In-vehicle parking meter advantages include:

- Relatively easy to use, although some time is spent monitoring use and purchasing more time.
- Relatively simple to setup and management.
- Reduces coin counting and revenue auditing.
- Software is available to improve the auditing of funds and help provide additional utilization data.
- No need for the user to carry change.
- Reduces the impact of stay limits, as the unit will deduct time until all time has been exhausted (although parking time limits could also limit stays).

Disadvantages include:

- Used primarily by frequent downtown visitors or employees, not periodic (occasional) visitors.
- Units can be lost or stolen, and can be costly to replace.
- Requires sufficient parking enforcement.

Pay-by-Space or Pay-and-Display

Pay-and-display and pay-by-space machines can be used in situations where the visitor parking area consists of on-street spaces or a set number of parking spaces in a lot. These machines are placed on block faces (typically mid-block), and customers pay their fees to the machine after parking their vehicles. For example, after a customer has parked his/her vehicle, they walk up to a pay machine. They pay for the amount of parking they think they will need by inserting the payment into the machine. Payment could be accepted using cash, debit, credit, or some other prepaid card.

The difference between the two machine types is simple. Pay-and-display machines require parkers to take a receipt from the machine after making payment and put it on the dashboard of their vehicle to prove they paid. Pay-by-space machines require parkers to note which space number they parked in before reaching the pay machine. They then enter the space number into the machine and pay their fee. Parkers using a pay by space machine are not required to display a receipt in their vehicle.

Additional parking meter technologies could include cell phone payment options and warning notices before overtime parking occurs.

Pay-and-display and pay-by-space machine advantages include:

- Simple setup and management (although enforcement is needed).
- They can accept multiple forms of payment.
- Flexible in setting parking rates.
- Can be less expensive than other parking equipment options (depending on the number of spaces covered). Systems range from $12,000 to $15,000 per unit.
- They can be more aesthetically pleasing than traditional parking meters.
- They can incorporate other features, such as pay-by-cell phone.
- People can't "hunt" for parking spaces with time still available, unlike single-space meters.

Disadvantages include:

- Requires sufficient parking enforcement.
- Mentally limits customer stays, as they have to either leave or pay at the machine again.
- Slightly more difficult to use than traditional parking meters.
- Pay-and-display machines require patrons to go back to their vehicles to display receipts.
- Pay-by-space machine could result in patrons having to go back to their vehicles if they did not note their space number.
- Additional signage would be required to help patrons park properly.
- The use of these technologies may prove cumbersome for large visitor areas.
- If a machine malfunctions, the revenue for an entire block face can be lost.
- There is a lack of direct human responses to questions or concerns. This disadvantage could be reduced through the use of roaming "parking ambassadors"; however, labor expense savings would be reduced.

Pay by Cell Phone

This technology would work similarly to a pay-by-space machine, but instead of paying the fee at a nearby machine, the customer would call a phone number using their cell phone. After calling the number, the customer would enter the space number on the space/meter, and the parking fee would be billed to an associated credit card. A sensor could even be located in the space that would determine when the vehicle has left, and the proper fee would be charged. This technology can eliminate some of the negatives of meter and multi-space meter technology, such as returning to meters to pay for more time, machine malfunctions, mentally limiting stays, and displaying receipts. Also, the costs to implement a pay-by-cell system can be very low. However, payment options could be significantly reduced, depending on the set-up of the system.

With respect to off-street parking facilities, future public parking lots/structures should incorporate at least the capability of providing pay parking (e.g., equipment islands and conduit for power and communications). Existing off-street surface lots could incorporate

multi-space meter technologies to collect fees (for visitor parking spaces) and possibly access card technologies (for permit spaces) in some areas, assuming the lots will remain in existence long enough to justify the expense of the investment. Larger parking facilities constructed in the future could incorporate exit cashiering, pay on foot, or other similar technologies.

Based on existing and anticipated future parking demands, on-street parking will likely be a mix of pay parking and time limited parking. Implementing pay parking on specific block faces would be a function of parking demand. On-street spaces with consistent parking demands greater than 85% at peak would be potential locations for pay parking. Multi-space parking meters would be recommended (e.g., pay by space or pay and display), and they could incorporate pay by cell phone. Parking rates would be set to encourage a parking utilization of 85% to 90% per area.